

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and *etc.*

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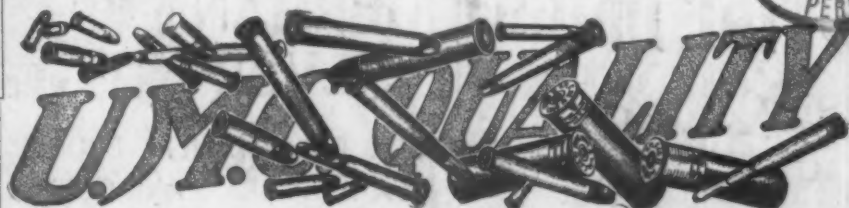
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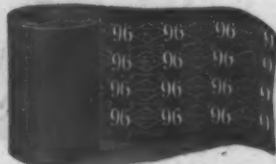
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# THE IRON AGE

New York, Thursday, May 4, 1905.

## An Iron Ore Train Takes a Flying Leap.

The accompanying illustrations give some of the particulars of one of the most interesting occurrences in the annals of American railroading. They depict an accident which befell an iron ore train on the Lake Champlain & Moriah Railroad February 16. It was a most

a distance of about 2 miles, attaining a velocity of probably 100 miles an hour, and then plunged off the end of the track to much lower ground, which it struck at a point over 50 feet lower than the track level. The condition of the wrecked train is shown in Fig. 1.

The rear of the train did not strike terra firma for a distance of 172 feet, as indicated in the diagram, Fig. 2,



Fig. 1.—View of the Wreck. The End of the Track from Which the Train Took Its Leap Is at the Left of the Picture.

remarkable experience. The train took a leap of over 300 feet. The cars were not damaged beyond hope of repair, and not a man was injured.

This accident occurred near Port Henry, N. Y. The

showing the topography of the ground and the location of the track. The terrific impetus drove the last car nearly 160 feet further. It is believed that the locomotive traveled 340 feet horizontally through the air with the full train attached before reaching the ground, when it plowed its way fully 150 feet more.

An excellent view of the point from which the train took its flying leap is given in Fig. 3. This shows the elevation of the end of the track as well as the sloping character of the ground at that point. In Fig. 4 is presented a view from the end of the track, which shows how the train landed. The locomotive fared very badly, its remains being shown in Fig. 5.

From the appearance of the wrecked cars it would seem impossible for them to possess much salvage value. They were practically new, having been built for the Lake Champlain & Moriah Railroad last year by the Pressed Steel Car Company. That company has undertaken to repair the cars and has agreed to charge not to exceed 10 per cent. above the actual cost of doing the work, and has given the assurance that the charge will be from \$200 to \$500 for the repairs on each car.

It is believed by the railroad management that if the crew had remained on the train and put on the car brakes they would have been able to hold the train, as the brakes were made especially for this railroad and were therefore designed to meet the requirements of checking speed on a very heavy grade. Train crews have frequently stopped

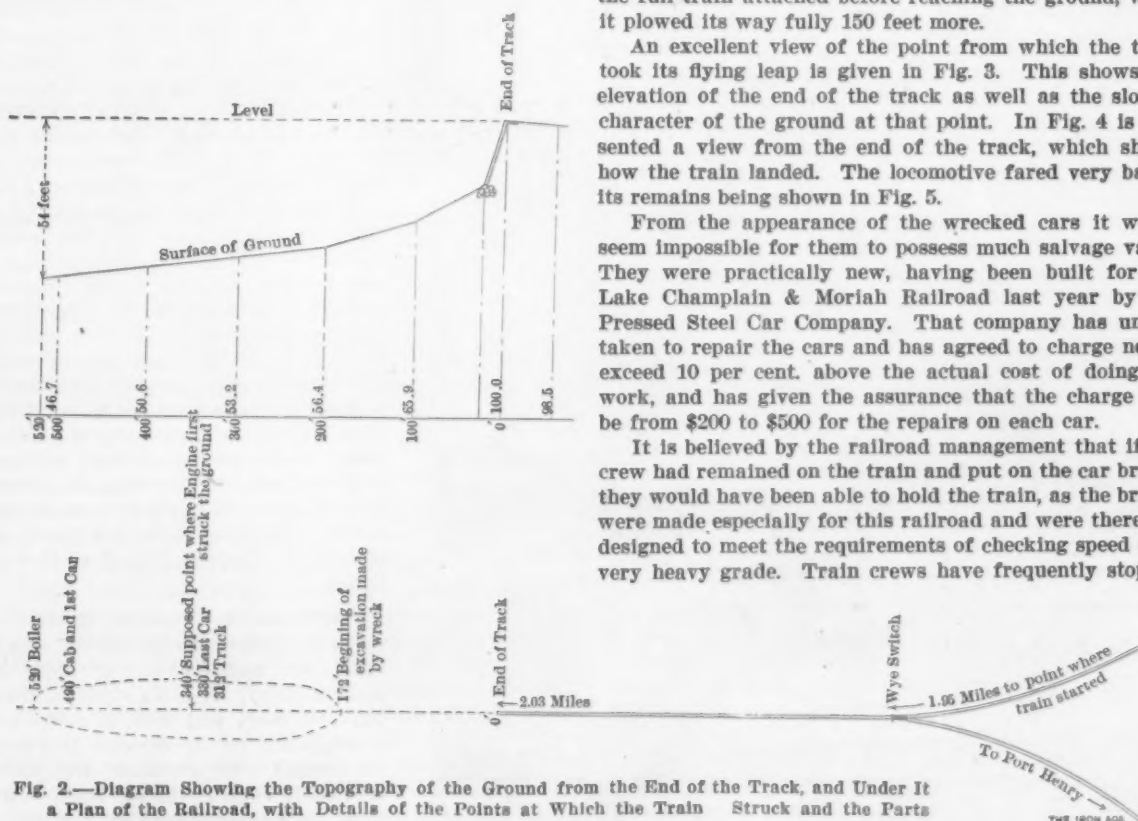


Fig. 2.—Diagram Showing the Topography of the Ground from the End of the Track, and Under It a Plan of the Railroad, with Details of the Points at Which the Train Struck and the Parts of It Finally Rested.

train, which consisted of a locomotive and seven steel gondola cars, each loaded with about 45 tons of iron ore, was on its way from the mines of Witherbee, Sherman & Co., at Mineville, N. Y., to Port Henry. Shortly after the train started from the mines the throttle of the engine refused to work, and as the train was running down a grade of about 200 feet to the mile, the crew became frightened and all of them jumped, landing in snowbanks, so that they were not injured. The train ran for

a train with these brakes when the engine was going at a good speed.

The electric locomotive recently built for the New York Central Railroad's terminal service, was tested April 25 in the presence of a number of visiting railroad officials, and it broke all previous speed records for electric locomotives by covering 83 miles in an hour, drawing a heavy train.

## Western Mesaba Mining Developments.

DULUTH, MINN., April 30, 1905.—I presume that the magnitude of the work now under way on the western Mesaba in preparation for the commencement of mining and the shipment of ores is not appreciated by one in ten of the men interested in mining on that range.

### The Oliver Iron Mining Company's Operations.

Since its purchase of lands of the Canisteo Mining Company in township 56-24 and from other owners in adjoining towns the Oliver Iron Mining Company has been engaged in development upon a scale most important and rapid. The chief work under way at present is in 56-24, where the company owns the Arcturus mine in sections 12 and 13, the Diamond in section 15, the Holman and adjoining forties in sections 21 and 22, and the Canisteo in sections 29, 30 and 31. It is giving employment now to about 175 men in this township and has three shafts open and developing. It is clearing land, hauling an enormous amount of fuel, erecting buildings necessary for a large operation, sinking shafts and driving drifts in the development of underground explorations, is studying the proper methods of concentrating these sandy ores, opening roads and every sort of operation requisite for the making of important mining camps out of the wilderness. For until now all this region was a vast timbered wilderness, covered in part with the stumps and dead tops of pine trees, in part with hard wood, or with swamps and lakes. The most westerly of these operations is at Canisteo, at the new village of Bovee, and this is 8 miles from a railroad, so that the hauling out of a vast quantity of fuel, of boilers and mine machinery and of the necessary supplies for a growing village has been

be marked on maps of the Mesaba, as its site is sure to be of much importance and interest to those connected with Mesaba mining matters from this time forward. The mining company's buildings are situated at the exact corner of sections 29, 30, 31 and 32, the office in one, the shops in another, the stable in the third and the black-

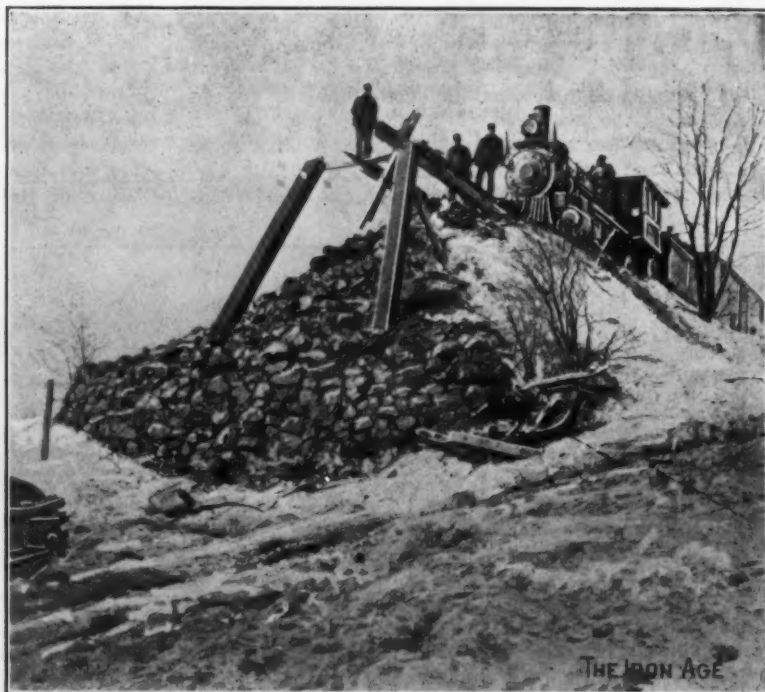


Fig. 3.—End of Track from Which the Train Took the Flying Leap.



Fig. 4.—View from the End of Track, Showing How the Train Landed.

no mean undertaking in itself. All the remaining locations are still further in the wild.

### Bovee to Be a Place of Importance.

The village of Bovee occupies the north half of the northwest quarter of section 32, T. 56, R. 24, and should

smith shop in yet another. In section 30 the company is sinking a shaft and is now down about 100 feet and into ore. A prior shaft had been put down east of the ore body; this is now utilized for pumps. There is a great quantity of water in this ground, as is usual in new districts on the Mesaba, where the earth has been saturated

for ages and lies low and near swamps and lakes. This shaft is down but 160 feet and there are no lateral workings, but it is lifting 1200 gallons a minute with two large Prescott sinkers and a No. 10 Cameron. It is gradually draining the basin. At this location there is a very large ore body, extending over several sections irregularly, and the company proposes to be mining here heavily in the course of another year. A fine new wagon road has been built through from the west side of section 30, where it connects with the old Itasea County road, to the center of section 21, where it joins the old road again.

### Holman and Fletcher Mines.

In 21, just south of the old wagon road, the Holman is the scene of great activity. A main shaft is about 145 feet deep, and several drifts are now driving off in various directions to connect with diamond drill holes previously sunk in the ore body. This mine is making some 700 gallons of water a minute. Here elaborate and comprehensive experiments have been made in washing these ores, the experiments having lasted through a year or so. The concentrating plant located by the Standard Mining Company (W. P. Snyder) at the Arcturus mine, near by, has been moved to the Holman, and the tests carried on by means of it. The elaborate jigs were discarded, as it was found that good results were secured by the use of a revolving tilted



barrel screen. Into the upper end of this ore was dropped and the fine sand went through the screen and was carried away by water. The ore came out in two sizes, one coarse, at the lower end of the screen, and the other fine, through the lower mesh. Tailings, fines and coarse concentrates for every 10 feet in depth of shaft and length of drifts have been sorted and are piled at the plant, making a most complete showing of the results. Except for some comparatively narrow seams of very poor ore it handles well, and the concentrates are excellent product—dry, coarse, free from dust and high grade.

G. G. Hartley, who was one of the original proprietors of the Canisteo Company, has taken the Fletcher 40, the southwest of the northeast of section 28, and has six drills working there day and night and is finding some ore. This land lies in a swamp surrounded by hills, and between it and the Holman is quite a range from which

Considerable other exploration is under way by the Oliver Company on lands it has taken recently. As one passes easterly through the adjoining township of 56-23 he finds the company at work in sections 19, 20, 21 and 15. Other parties, including the Great Northern Railroad, are beginning work, building camps, clearing ground and moving in drills, in sections 18 and 21. On section 11, 12, 14 and 15 much work was done years ago by the Great Northern and companies deriving their leases from it. There is little now going on about these former operations.

#### In the Vicinity of Nashwauk.

Still further east, in the adjoining township of 57-22, the village of Nashwauk is situated in section 32. Surrounding it are the Hawkins mine of the International Harvester Company, the Larue of Jos. Sellwood and the Crosby of the Cleveland Cliffs Iron Company. The



Fig. 5.—Remains of the Locomotive.

the pine was long ago cut off and where forest fires annually kill every young tree.

#### Diamond and Arcturus Mines.

Half a mile from the Holman's Rohn shaft is the old Diamond mine, one of the original explorations on the Mesaba range and a property on which several Minneapolis men went broke in the early days. Its ore is of the same character as that of the surrounding formation—sandy and washable. A considerable stock pile has been on surface for many years and looks well, with its silica carried off by rains and winds. This has belonged to the Oliver Iron Mining Company since that company was a Carnegie organization, but nothing has ever been done by it at the mine.

Two miles further east, in section 13, is the Arcturus, where a number of shafts have been sunk by various option holders in times past and where the exploration by drill and pit has been very extensive, though not altogether thorough. The Oliver Company is now at work here exploring and may open the mine the coming year. The ore deposit at this property is supposed to be one of the large ones of the Mesaba.

former two are preparing to mine ore and will be shipping in a few days. At the Hawkins they are cleaning up the ore body where caving sand covered it last winter, are repairing and refitting their steam shovels for mining and stripping and are pumping from the underground openings. The Larue is stripping with two shovels, extending the area uncovered and connecting two parts of the ore body, and will be working in ore soon. This stripping is very deep, and the ore area so far opened is small. The Crosby seems to have proved somewhat of a gold brick and nothing is being done there at present.

About 4 miles northeast of these mines, on the road to the town of Hibbing and its great group of properties, the firm of Corrigan, McKinney & Co. are running from six to eight drills in proving up the ore body of their St. Paul mine, in the south parts of sections 23 and 24, preparatory to opening it this year. A shaft is to be sunk as soon as the exploration is completed. Near the St. Paul, in section 13, is the small Forest mine of the Tesora Mining Company, and this is being stripped preparatory to a larger output than was possible in its initial season last year.

**Railroads Necessary.**

Except for a few scattering and unimportant explorations that may be under way in various localities through this 25 miles of the West Mesaba, these are all the exploratory activities of the region. But it is necessary that there shall be railroads where ore is to be mined and engineering parties are not lacking. There is probably no doubt that the Duluth, Missabe & Northern Railroad will build along the western range and will arrange to pass close by all deposits from which it is liable to secure tonnage. Two routes have been considered, one an extension from its present terminus at Hibbing straight through to the Mississippi River, a distance by survey of about 35 miles; the other a cut off from the main line a short distance north of Duluth, running northwesterly till it reaches 56-24 and thence to the various ore centers. This latter plan would require a much greater investment, but it would give a shorter and more direct line to Lake Superior, and the policy of the United States Steel Corporation, which owns this road, has been to save in operating expense even at a greater initial investment. The Great Northern owns a large acreage of lands in the western range, both in 56-23 and 56-24, some of which is explored and some not, and has been considering a railway. Surveys have been made connecting its Mesaba terminus at Nashwauk and its main transcontinental line at Grand Rapids, which is where the Mesaba formation crosses the Mississippi River. The probability is that both roads will build if some agreement as to leases and tonnage is not made between them.

D. E. W.

**An Automatic Fire Alarm Operated Over Telephone Wires.**

A fire alarm system that may be installed in connection with telephone service without requiring any change in the regular equipment or interfering with normal operation has recently been patented by W. L. Denio, Rochester, N. Y. The apparatus consists of one or more signal boxes that may be installed in any building having a telephone and secures its energy from the central office, and so has no local battery to get out of order. One signal box to a building is sufficient ordinarily, but if one box is placed on each floor the signal resulting from a fire indicates the particular floor on which it starts and so saves time in locating it.

In the circuit leading from a signal box are located glass protected push buttons on the walls or columns, and thermostats on the ceilings. The signal box contains an electro magnet, which is energized by the closing of the circuit through either a thermostat or a push button. The magnet unlocks a vibrating pendulum driven by an escapement wheel and a spring, which actuates a revolving star pointed contact wheel, and sends in the alarm. The contact wheels may be provided with a number of points corresponding to the floor, so as to indicate the floor from which the alarm proceeds. The signal box is arranged to repeat the signal a sufficient number of times to insure its being correctly interpreted by the operator in the central exchange. When a box operates it causes a light at the exchange to flicker, and as the operator is able to hear the mechanism of the box, which gives a positive and distinct sound, there is no danger of an alarm being mistaken for anything else. The circuit through the alarm apparatus may be broken after the alarm has been sent in, so that there is no interference with the use of the telephone.

The thermostats when subjected to a temperature of 150 degrees collapse and close the circuit, thus sending in the signal, or if the fire is discovered before a thermostat acts the alarm may be sent through one of the push buttons. It makes no difference if the telephone line happens to be busy or the receiver carelessly left off the hook, the alarm takes precedence, automatically cutting off the telephone while it is working. The operator at the central exchange, receiving a signal, notifies a special operator in charge of the fire calls, who in turn sends the alarm to fire headquarters, being able from the list of subscribers to tell the exact location of the fire. In the meantime the first operator rings the telephone

bell in the office or building from which the alarm came to signify that an alarm has been received. It may happen in this way that the occupants of a building will be apprised of a fire in their building before they themselves have discovered it.

The thermostat and push button circuit is such that it could be almost entirely destroyed and still send in the alarm. If a workman in making alterations about the building had carelessly cut wires in several places the system would remain operative. The usual municipal fire alarm systems simply indicate the neighborhood of a fire and time is frequently lost in learning its exact location, whereas with the Denio system the building or even the floor is designated at once. An even greater advantage is that the sending of an alarm need not be dependent upon human agency, and therefore the failure of persons who know of the fire to do the proper thing because they are excited has no disastrous effect. Another advantage of this system is that it uses telephone wires which are not apt to be out of commission, as they are continually being tested and kept in order. Moreover, when a line does happen to be in trouble, there is only one office or building without fire alarm protection, whereas with other systems several signal boxes are usually on one circuit, which, being in trouble, leaves a much larger field exposed.

An invention of a similar character is known as an automatic fire alarm transmitter and comprises signal box, thermostat and push button in one device. It is attached to ordinary telephone lines and sends its alarm in the same way. This transmitter is designed more particularly for use in hotels (one in each room), but it may be attached to any telephone circuit.

Both of the devices described are made by the Denio General Electric Company, Rochester, N. Y.

**Tricks in the British Tin Plate Trade.**

Our London correspondent writes as follows concerning some sharp practices said to be current in the British tin plate trade:

Every trade has its tricks, for some of which excuses may perhaps be found. But when "tricks of trade" involve dishonesty they cannot be condoned, a reflection which forces itself upon us because of certain rumors which are afloat as to the prevalence of malpractices in the tin plate trade. The branding of boxes containing "unassorted" tin plates and "wasters" to indicate "primes" is one of the tricks which is said to be rife in that trade. Such false marking is none the less reprehensible because its detection may be difficult owing to the absence of any definite and general rule in the trade as to what constitutes the standard of quality, or because punishment if the fraud be detected, may be too expensive and bothersome a matter for the institution of legal proceedings, especially if the buyer resides in a distant country.

Trickery of this kind is as reprehensible as is the branding of boxes containing ordinary coke plates as charcoal plates, to which latter term, by the way, custom now gives a meaning entirely different from that which first attached to it, charcoal plates being nowadays understood not to be tin coated plates of charcoal iron but steel plates more heavily coated with tin than are coke plates. It is just this extra coating of tin converting a coke plate into a charcoal plate which is so difficult of ascertainment.

Another malpractice which is alleged to be not uncommon is that of putting only 111 sheets into tin lined boxes supposed to contain 112 sheets, the tin case being soldered on the top sheet of the box. The buyer may cover himself against a practice of this kind by stipulating that the boxes shall contain 112 sheets net, but in the absence of such a stipulation the seller could probably shelter himself effectually behind the plea that the boxes actually had 112 sheets, although one of them was utilized for the lining.

All these dodges bring a little grist to the mill, but we trust that they are the exception, not the rule. Though



we do not in any sense condone this smart class of business dealing, it must be added that the buyer who meekly submits to it is only less blamable than the seller.

#### A 24-Inch American Lathe with Motor Drive.

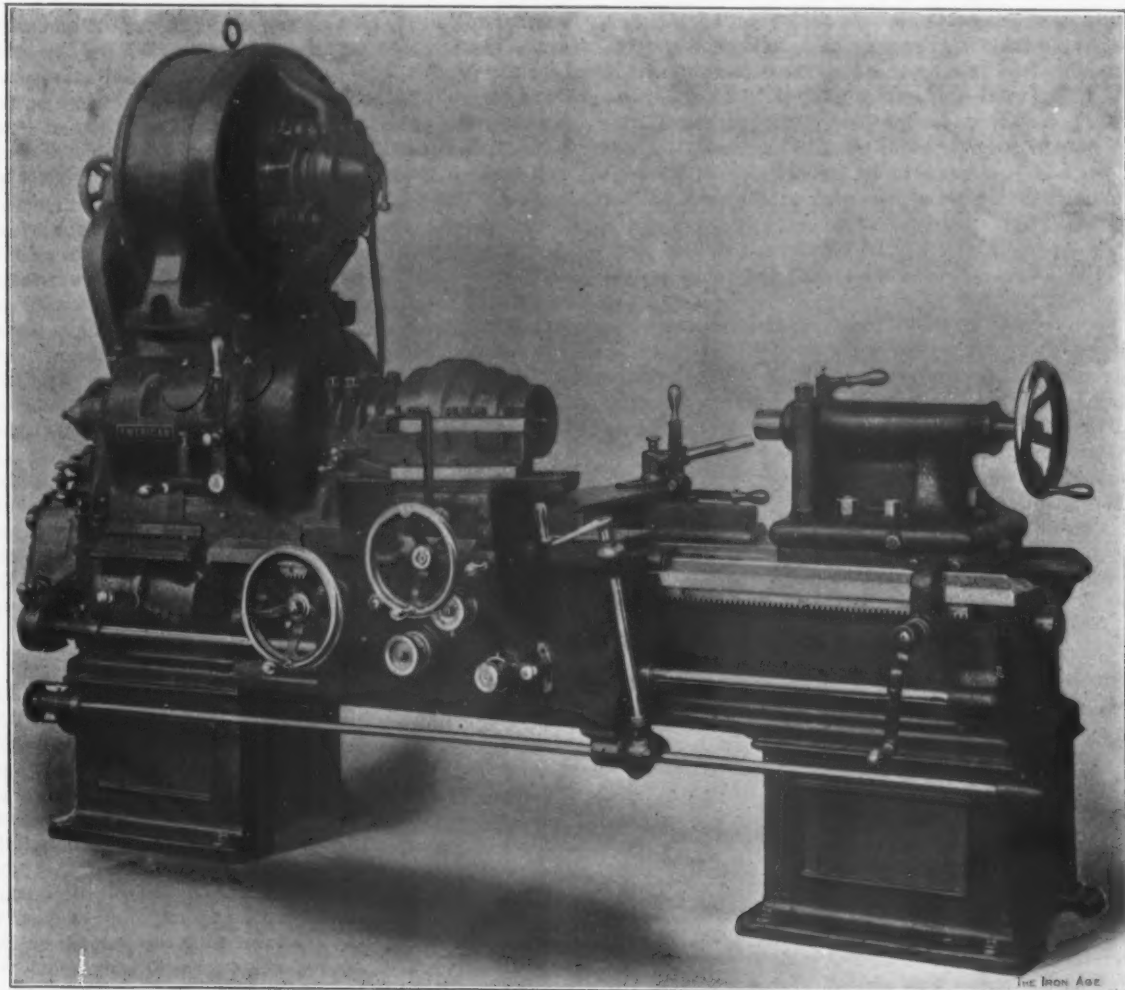
The principal features of interest to be found in the lathe shown in the accompanying half-tone are the arrangement for driving with a motor through an all geared head and the special multiple tool rest. With the exception of these parts in its equipment the lathe is a standard 24-inch by 8-foot pattern made by the American Tool Works Company, Cincinnati, Ohio.

The motor has a capacity of 9 horse-power, is supplied with direct current and runs at variable speeds ranging from 600 to 1200 revolutions per minute. Starting, stop-

They are arranged to run at low pitch line velocities to reduce the noise of their running as much as possible. The casing which incloses the gears contains provisions for obtaining access to the working parts and for oiling them. The points about the all geared head to which attention is more particularly directed are that there are no slip gears, pull pins, hollow shafts, tumbler gears nor complicated delicate parts. The necessary adjustment for any desired speed can be determined by referring to an index plate on the front of the head.

The feeding and screw cutting mechanism is also equipped with a rapid change gear device, which affords a wide range of changes, each one being instantly obtainable while the lathe is running and without removing a single gear. Simple but complete index plates show how to obtain any desired feed.

The only change required to adapt the lathe to belt



A Motor Driven 24-Inch by 8-Foot Lathe, Built by the American Tool Works Company, Cincinnati, Ohio.

ping and reversing are easily effected through the controller handle located conveniently at the right end of the carriage. The speeds obtained electrically multiply the fundamental speed changes obtained mechanically through the all geared head. The latter is a new speed changing device and provides four spindle speeds, the ratios of which are 32.5 to 1, 10.8 to 1, 4.31 to 1 and 1.44 to 1. The greatest advantage of this device, by virtue of its high gear ratio and the wide face driving pulley (in the belt driven form), is an enormous power which makes it possible to take continuous cuts of far beyond the pulling power of an ordinary lathe of even much greater swing. It is claimed that between 300 and 400 per cent. more work can be turned out on this lathe in a given time than on an ordinary lathe of the same size.

Each mechanical speed is obtained instantly while the machine is in operation by manipulating the two levers shown on the front of the head, which operate powerful positive clutches. Only six gears are employed in the device and its construction is simple. The gears are of coarse pitch and wide face and are cut from the solid.

drive is to replace the gear on the driving shaft with a pulley of any size that may be desired. As it is unnecessary to shift the belt to change the speed a pulley of wide face and large diameter may be used. The regular carriage equipment includes a compound rest and a full swing rest. The multiple tool rest shown in the engraving is used for such special work as the simultaneous turning of four diameters, as, for instance, the four faces of a cone pulley. As may be seen, the lathe is built for the heaviest duty of modern practice, allowing the use of high speed steels with the best efficiency.

The German Government has formally notified the United States that the tariff agreement between Germany and America will terminate on March 1, 1906. This is the day the new reciprocity treaties with seven European nations, which were signed recently, go into effect. While serving the formal notice on America Germany also announces that she stands ready to negotiate a reciprocity treaty with the United States.

## Novel Cases of Infringement of Patents.\*

BY LUTHER L. MILLER, CHICAGO.

The law, like other sciences, grows and develops with the advancement of society. Wrongs that found no remedy yesterday are recognized by the law to-day and a remedy provided for their correction. New applications of fundamental principles of law made necessary by changing conditions and the more complex relations of modern society are constantly being made by the courts, and once approved become a part of that great body of our unwritten law, estimated by an eminent law writer as comprising fifty times as much as our statutory or written law.

This article will treat briefly of two doctrines recently engrafted upon our laws by court decisions. The United States Supreme Court has not as yet been called upon to decide their legal correctness, but as they have been announced as law by the Federal Circuit Court of Appeals in four of the nine circuits of the United States, and are in accord with earlier general expressions by the Supreme Court, they probably will be approved by the higher court if presented to it for decision. The doctrines alluded to are here presented in the two following questions:

1. Can a person who has purchased a patented article from the lawful owner of the patent upon such article infringe the patent?

2. Can a person be held for the infringement of a patent for making an article not a part of the patented structure and not covered by any claim of the patent?

Both of these questions have been answered in the affirmative by the Federal courts.

### Patentees' Reservations on Use or Sale.

Upon boxes containing certain sizes of Welsbach lights and mantles, in labels attached to Victor gramophones, Edison phonographs, certain shoe button fastening machines, Edison mimeographs, the stencil paper intended for use with said mimeographs, various kinds of machinery and the extra parts or repairs of certain machinery, the manufacturer makes certain express reservations or restrictions upon the use or the sale of such patented article or machine. In the case of the Welsbach Company, the restriction is that the light or mantle so labeled shall not be used for park or street lighting. The phonograph companies specify that their phonographs shall not be sold for less than a certain specified price. The manufacturers of the shoe button fastening machines require that only staples or staple wire sold by them shall be used in their machines. In other cases the restrictions are that the machines so marked shall be used only in certain territory or for certain purposes, or the extra parts only upon the machines of the vendor, etc.

So far as the writer has noticed, the courts have not passed upon the restrictions placed upon their products by the manufacturers of Welsbach lights or Edison mimeographs and stencil paper. The conditions made by the Victor Talking Machine Company upon the sale of its gramophones were considered in a suit by that company against the Fair Company, a corporation operating a department store in the city of Chicago. The full text of the label placed by the Talking Machine Company upon its gramophones is as follows:

NOTICE.—This machine, which is registered on our books No. . . . ., is licensed by us for sale and use only when sold to the public at a price not less than \$ . . . . . No license is granted to use this machine when sold at a less price. Any sale or use of this machine when sold in violation of this condition will be considered as an infringement of our United States patents under which machine and records used in connection therewith are constructed, and all parties so selling or using this machine contrary to the terms of this license will be treated as infringers of said patents, and will render themselves liable to suit and damages. This license is good only so long as this label and the above noted registered number remain upon the machine, and erasures or removal of this label will be construed as a violation of the license. A purchase is an acceptance of these conditions. All rights revert to the undersigned in the event of any violation.

VICTOR TALKING MACHINE COMPANY.

\* Copyright, 1904, by Luther L. Miller.

Gramophones so marked were sold by the Talking Machine Company to a jobber and by the jobber to the Fair. The Fair retailed for \$18 gramophones listed at \$25, and for this violation of the conditions set up in the notice the Victor Talking Machine Company brought suit in the United States Circuit Court at Chicago against the Fair for the infringement of its patents. The Circuit Court dismissed the complainant's bill, saying that if any right of action existed it was for damages for breach of contract and not under the patent laws. The case was then appealed by the complainant to the Circuit Court of Appeals for the Seventh Circuit, where Judge Baker, in announcing the opinion of the court, said that the grant of a patent covers three separate and distinct fields—the exclusive right to make, the exclusive right to use and the exclusive right to sell the patented invention. The patentee may license one person to manufacture the patented article, another to use it, and yet another to sell it; he may subdivide his patent monopoly as he pleases, and offer to sell or lease it in the most fanciful parcels and upon the harshest and most arbitrary terms; whether purchasers or tenants come or not is purely the patentee's concern; but if they do come and accept the conditions imposed by the patentee a court will enforce the terms of their contract of purchase or leasing. The decision of the Court of Appeals thus sustained the right claimed by the Victor Talking Machine Company to treat as infringers all who sold its gramophones in violation of the terms and conditions imposed by it. The rights of the public who had purchased instruments at full list price to resell at a lower price was not decided, being expressly reserved from the opinion.

In another case before the Court of Appeals for the Eighth Circuit the National Phonograph Company brought suit for the infringement of its patents upon phonographs, alleging a violation of the conditions appearing in a label placed upon each instrument limiting the right of the purchaser to sell such phonographs only at certain list prices and to dealers who signed an agreement to maintain such list prices. The court held that the sale of a phonograph by a dealer in violation of the terms of such notice constituted an infringement of complainant's patents.

### Restrictions in the Use of a Patented Article.

In two suits before the Circuit Court of Appeals for the Sixth Circuit both of the questions appearing in this article were considered. Each of these suits was brought for the infringement of patents upon a machine for fastening buttons upon shoes, such a machine being used by retail dealers to reset buttons upon shoes sold to customers. The machine in one of these suits used specially formed staples, the machine involved in the other suit made its own staples from a coil of wire placed within the machine. Stamped upon a metallic plate attached to each machine was the condition that the staples or the wire to form them should be purchased only from the vendor of the machine. In neither case did the patents upon the machine include the staples or the fastening wire. The defendant in one of the suits mentioned made staples adapted and intended for use in the button fastening machine of complainant, and in the other suit it appeared that the defendant put up wire of proper size and quality, in coils of suitable dimensions for complainant's fastening machine, and with the intention that it be used in such machine. Suits were brought respectively against the maker of the staples and of the wire, but not against the users of the machines, although the latter might also have been sued. In each of the suits the defendant demurred to the complainant's bill, which in law signifies that, even assuming the fact alleged by complainant to be true, still the defendant insists that the complainant has no legal cause of action. The court held in each case that the violation of the condition expressly reserved by the owner of the patents constituted an infringement of his patent rights, and further that the manufacture and sale of staples in the one case and in the other the putting up of wire from which staples were to be formed, with the intention that such staples or wire be used by another person to infringe the complainant's patents, was a contributory infringement of those patents.



A partial exception to the right of a patentee to impose conditions upon the use of the patented article is illustrated in several cases which arose upon the alleged right of the owners of patents upon telephones to refuse to render telephone service to telegraph companies. The courts in the cases mentioned held that inasmuch as a public telephone company is a common carrier such refusal was unlawful. Under the law it is the duty of a common carrier of passengers, goods or messages to serve all persons who present themselves and are willing to pay a reasonable fee for such service. The owner of the telephone patents during the life of such patents might have refused to use his inventions or to permit others to use them and the public would have had no remedy, but when he entered the field as a common carrier he was held to be bound by the rules of law governing common carriers.\*

### The Buffalo Standard Compound Duplex Mine Pump.

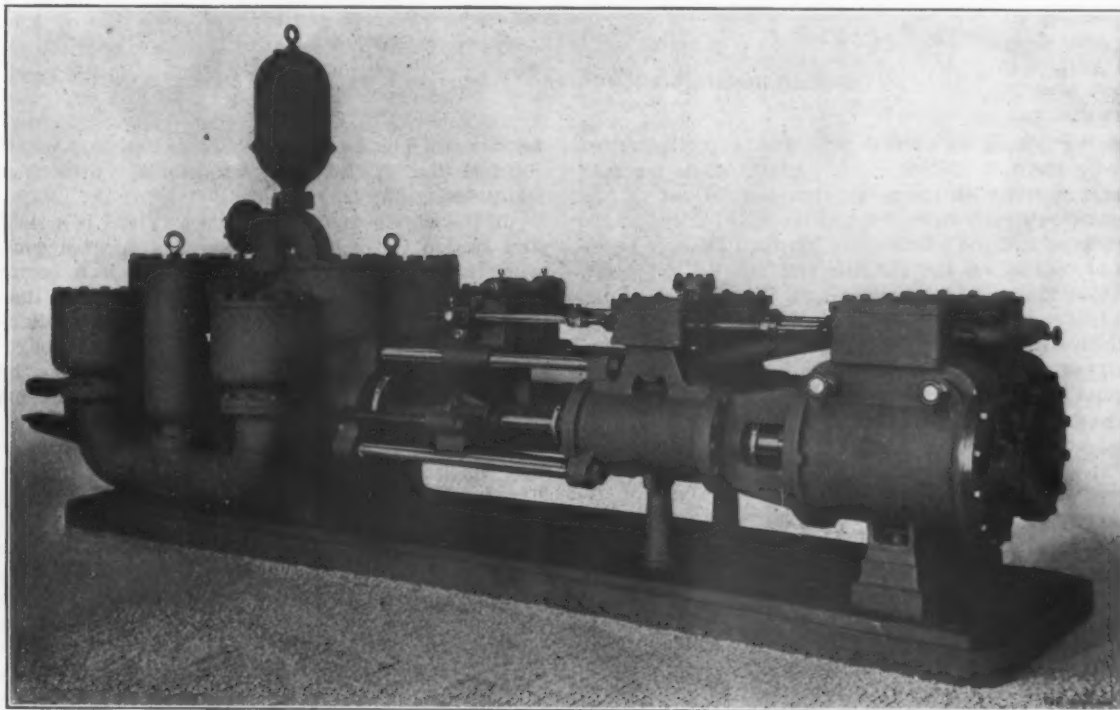
A mine pump operates under about as severe conditions as are ever found in pumping practice. To produce a satisfactory unit, combining efficiency, durability and

ends of the water cylinders. The latter have a partition in the middle. Each pair of plungers is connected by heavy steel side rods, carried through cast steel cross heads, each of which is in turn connected to the piston rod of the tandem steam cylinders.

An undesirable feature of many mine pumps lies in the inaccessibility of the water valves. In this pump both sets of valves are placed in large chambers so located as to be easily reached, and being above the level of the cylinders they are always kept full of water, or primed. The uninterrupted area of each set of valves is equal to 50 per cent. of the plunger area, due to which a noiseless and efficient action is obtained.

The steam cylinders are connected by a well designed cradle of sufficient length to provide them with deep stuffing boxes and give ample room for repacking. The valve stems are provided with means for adjustment and taking up wear, and allow the setting of the valves without uncovering the steam chest. Any part of the pump can be removed without disturbing the neighboring parts or dismantling the machine.

The pumps are built to stand a working pressure of 500 pounds to the square inch, and all attachments are specially strong in order to stand the rough usage and



Standard Compound Duplex Mine Pump, Made by the Buffalo Steam Pump Company.

moderate weight, is a problem that taxes the resources of the designer. A mine pump is expected not only to handle water which may contain quantities of mud, sand, &c., in suspension, or chemicals capable of attacking anything but a glass bottle, but must do so under wide fluctuations in head and suction depth, and all with a fair degree of economy.

The leading aim in the design of the standard type of mine pump illustrated herewith was to improve the working qualities, even if at the expense of space, weight and cost to manufacture. At points where adjustments, repairs and replacements are inevitable care has been taken to afford convenience for their rapid and easy execution. The pump is one built by the Buffalo Steam Pump Company, Buffalo, N. Y., and has four single acting outside packed water plunges, which work in the

lack of careful attention to which they are likely to be subjected. A generous and well proportioned distribution of metal in this pump contributes greatly to smooth action and lack of vibration. Although originally designed for mine work, its rugged characteristics have caused its adoption for less severe service, where its ability to perform its work without skilled attendance was a point to be considered.

The electric underground railway of London has in operation during the rush hours from 8 to 10 a.m. and 5 to 7 p.m. 31 trains per hour in each direction. This schedule has been gradually developed from the initial service of 15 per hour as the employees became more familiar with the working of the railway and its various safety and other devices. A further increase cannot be anticipated because of the fact that the time occupied in switching the trains cannot be further reduced.

\* Cases referred to above:  
Rupp & Wittgenfeld Company *versus* Elliott *et al.* (C. C. A., 8th Cir.) 131 Federal Reporter, 730.  
Victor Talking Machine Company *et al. versus* The Fair. (C. C. A., 7th Cir.) 123 Fed. Rep., 424.  
Heaton-Peninsular Button Fastener Company *versus* Eureka Specialty Company *et al.* (C. C. A., 8th Cir.) 77 Fed. Rep. 288.  
Cortelyou *et al. versus* Lowe *et al.* (C. C. A., 2d Cir.) Ill. Fed. Rep., 1005.  
National Phonograph Company *versus* Schlegel *et al.* (C. C. A., 8th Cir.) 128 Fed. Rep., 733.

The strike in the Mesaba iron ore district is entirely over, the Lake Superior shipping that has been tied up in ice is out once more, and the ore business is moving satisfactorily at all upper lake points.

## Water Cooled Ports for Open Hearth Furnaces.

In the operation of open hearth furnaces with producer gas one of the greatest troubles is the maintenance of the gas ports. The port ends of the furnace being directly exposed to the full heat of the outgoing products of combustion, the ends are burned away rapidly, and under ordinary conditions require renewal at the end of about 100 heats. By that time they have become so badly

each pipe, so that a leak due to a defect in one pipe may be detected and the water shut off from that pipe without damage to the port or without interfering with its regular operation. This device can be applied to either single or double ports.

The primary function of the pipes is to support the superimposed magnesite brick, as the latter, while possessing refractory qualities greatly superior to those of silica brick, will not endure unsupported in the arch. The magnesite brick being a fairly good conductor of heat, the water cooled pipes keep the temperature of the

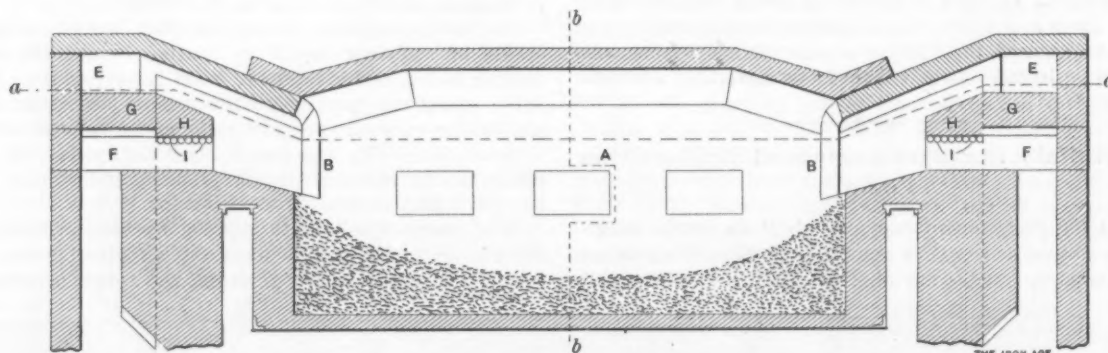


Fig. 1—Longitudinal Sectional View of a Furnace with Water Cooled Ports.

burned away that the flame is no longer properly directed on the surface of the bath, but tends to go to the roof of the furnace, with the result that the amount of fuel consumed is greatly increased and the roof injured by the direct impact of the burning gas. It then becomes necessary to cool down the furnace and rebuild the ports. To avoid the necessity of this and the renewal of the ports different schemes have been tried, such as repairing them with sand and molasses, magnesite or other material, but none of these expedients has been quite satisfactory.

The expense of renewing the ports at the end of every

bricks resting on them low enough so that they will stand the full heat of the furnace indefinitely without materially fusing away.

In the accompanying illustrations Fig. 1 is a longitudinal section through the center of a furnace equipped with the water cooling device. Fig. 2 is a horizontal section of one-half of the furnace taken on the line *a a* of Fig. 1, the other half being symmetrically similar, and Fig. 3 is a vertical cross sectional view through the center *b b*, Fig. 1. The same reference letters are used in the several figures. A is the main furnace chamber, with inlets, *b b*, at each end and the runner C at the center. D is the upper wall or roof of the furnace chamber, which is of refractory material. It has the form of a flat arch, the purpose being to confine the region of combustion close to the upper surface of the material treated, but without bringing the upper wall into direct range of the inflowing burning gases. The opposite ends of the furnace are similar in construction, and in use the direction of circulation of the gases of combustion through the furnace is reversed at intervals, the inlet duct becoming the outlet duct, or flue, and *vice versa*.

Separate air and gas passages, E and F, communicate with each duct or outer arch B, these passages E and F being arranged to converge and meet within the arches B a short distance outside of the main chamber, as shown in Fig. 1. The part of the partition wall G which separates the air and gas passages is in the form of an arch, H, which is an important feature of the invention. The supplies of gas and air admitted to the furnace through the passages E and F are highly heated, and intense combustion takes place, the combustion commencing at the point where the two supplies meet, extending thence throughout the length of the furnace chamber. The air passage E inclines downwardly, and the inleaving duct B is a continuation in the same direction, the object being to direct the burning gases toward the center of the furnace basin, which increases the effectiveness of the treatment of the metal and saves the roof of the chamber.

The water tubes are shown at I, where they form an underlying support for the refractory material constituting the arch proper. The several pipes are connected at one end with the supply header J, as shown in Figs. 2 and 3, and at their opposite ends discharge into an outlet trough, K. In use sufficient water is circulated through the pipes to keep the latter cooled below the softening point, however intense may be the heat to which they are subjected.

The arch being entirely above the water pipes remains practically intact, even though the fire brick may be more

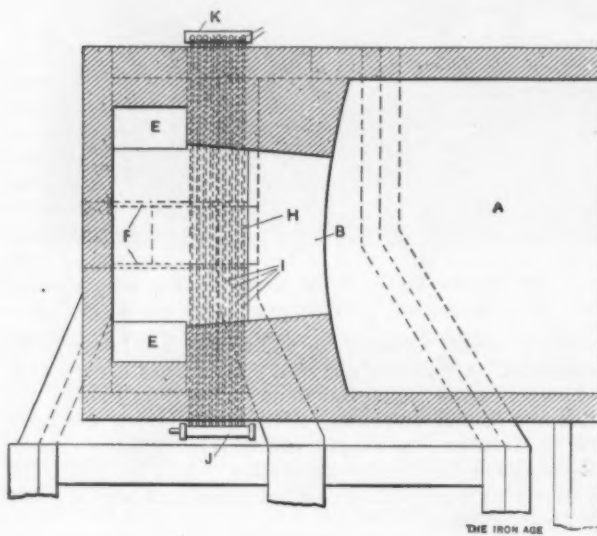


Fig. 2.—Horizontal Section of One Half of the Furnace on the Line *a a*. The Other Half is Symmetrically Similar.

100 heats is considerable, as it includes the loss of several days' product from the furnace, the fuel necessary to bring the furnace back to working temperature and the cost of labor and material in repairs. To avoid this expense and to increase the production of furnaces operating with producer gas a water cooled port arrangement, shown in the accompanying illustrations, was devised. The silica brick port arch at the front of the gas port is done away with in using this device, and a system of horizontal parallel water cooled pipes is substituted, upon which is laid an arch of magnesite or other refractory brick. An independent valve controls



or less disintegrated, and the fact that the arch is supported by the pipes, as before mentioned, makes it possible to use materials more highly refractory than silica brick, even though they may be subject to even greater disintegration. One of the great advantages of the arch is that it may be repaired without interfering with the operation of the furnace by depositing a small quantity of pulverized or granular refractory material on the upper edge of the arch. This material will vitrify under the influence of the heat and form a solid substance and thus prolong the life of the arch. Repairs may be made by passing the material in through the side doors by means of a long paddle, or spoon, while the furnace is in operation.

The advantages of the water cooled port most particularly emphasized are that it does away with all port renewals during the life of the furnace, thus increasing the production of the furnace and effecting a large saving in fuel and labor and material in repairs, and that the gas port is maintained of a uniform length throughout the life of the furnace. This effects a great fuel saving, as the flame is properly controlled and directed on the bath and the proper conditions for perfect combustion are maintained. The life of the furnace is prolonged by keeping the flame away from the roof and side walls, and the output is greatly increased by the ability to properly control the conditions of combustion.

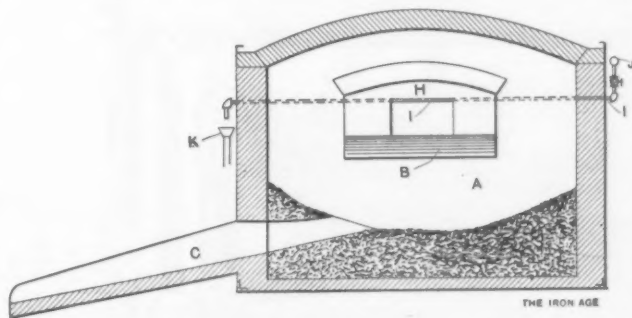


Fig. 3.—Vertical Cross Section Through the Furnace on the Line b b of Fig. 1.

Installations of this system have been made at the plants of the Illinois Steel Company, the Grand Crossing Tack Company and the Inland Steel Company, and the results in practice are stated to fully bear out the claims made for it.

The device is the joint invention of Geo. L. Davison and David R. Mathias. The patents are now owned and controlled by the Protected Furnace Port Company, 79 Dearborn street, Chicago, Ill.

The electrical generating equipment of the new battle ships Mississippi and Idaho, now building at the yard of the Wm. Cramp & Sons Ship & Engine Building Company, Philadelphia, will consist of eight 100-kw. units operated at 125 volts and arranged in two dynamo rooms. The electrical installation on the ships will be very complete, including motors operating on the Ward-Leonard system to drive the six big turrets for the 12-inch and 8-inch guns; ammunition hoists for these guns as well as the smaller ones; conveyors for transferring ammunition from the magazines to the hoists; boat cranes and winches, and all blowers except those used for the production of forced draft. In addition a very complete system of telephones, call bells, buzzers, gongs, annunciators, engine and steering telegraphs and revolution and rudder indicators will be installed.

The De Forest wireless telegraph station at Cleveland, Ohio, has been regularly reading messages from ships far out at sea. One from the Mallory liner Denver, sent from below Cape Hatteras, was plainly read. Another, from the Bermudian of the Quebec Steamship Company, reported the ship to be 200 miles from New York, on her way to Bermuda. The operator at Port Huron, Mich., read a message from the Red "D" liner Philadelphia, reporting herself 130 miles out. All of these ships are

equipped with apparatus of 1 kw. capacity and are served by very short masts.

### The Worcester Metal Trades Association.

The annual meeting of the Worcester Metal Trades Association, Worcester, Mass., was held at the State Mutual Restaurant April 28. Vice-President George F. Brooks presided in the absence of President F. E. Reed, who is in the West. About 50 were present. The speakers of the evening were Robert Wuest, Cincinnati, secretary of the National Metal Trades Association, and Charles E. Hildreth, Worcester, one of the Administrative Council of the association, the topic being the necessity of amalgamating the national and the local associations. No action on the subject was taken by the meeting.

Secretary Herman S. Hastings of the Worcester Labor Bureau, conducted by the local association, read his annual report, which contained interesting figures showing the excellent results that can be obtained by such a bureau. The number of men registered at the bureau for positions was 6046; number of men sent for to take positions, 3403; number of local requests for men during the year, 326; number of requests for men from out of town concerns, 57; number of requests from the National Metal Trades Association, 20; number of requests from local and out of town concerns not affiliated with either local or national associations, 64; number of requests for men from other labor bureaus, 15. The word requests should be understood to be general, applying to any number of men from one up, so that the number of requests does not convey a full idea of the number of men asked for. The number of men hired at the factories, not registered with the bureau, was 793; number hired who were registered, 705; number hired who were sent from the bureau, 521; total number hired during the year, 2019; number of men discharged, quit or laid off during the year, 1389; number of men voluntarily quitting, by strike (molders), 208; total number discharged, 1597. The appreciation of the work of the labor bureau is shown by the fact that Secretary Hastings has had 49 requests during the year for the bureau's card system from cities of the United States and Canada and one from Melbourne, Australia.

Enoch Earle, the retiring treasurer, read his report, showing a prosperous financial year for the association.

The following Board of Officers was elected for the year: President, F. E. Reed, the F. E. Reed Company; first vice-president, George F. Brooks, Harrington & Richardson Arms Company; second vice-president, Enoch Earle, P. Blaisdell & Co.; treasurer, Aldus C. Higgins, Norton Emery Wheel Company; secretary, Charles F. Marble, Curtis & Marble Machine Company; Executive Council, these officers, and J. Philip Bird, Hobbs Mfg. Company; E. M. Woodward, Woodward & Powell Planer Company; A. W. Whitcomb, Whitcomb Mfg. Company; Douglas Gordon, Marcus Mason & Co.

**Drawback on Swedish Charcoal Pig Iron.**—The Treasury Department has formulated regulations for the allowance of drawback of duty paid on imported Swedish charcoal pig iron used in the production of iron tubes, pipes, flues or stays manufactured by the National Tube Company for and on account of the United States Steel Products Export Company. The drawback will amount to 99 per cent. of the duties paid. The drawback entry must show the gross and net weight separately of the several kinds of iron tubes, pipes, flues or stays exported, and a transcript of the manufacturing records must be attached thereto, showing the percentage of both the domestic and imported charcoal pig iron used in the manufacture of each kind of tubes, pipes, flues or stays exported. In liquidation the amount of imported materials which may be taken as the basis for the allowance of drawback may equal the amounts claimed in the drawback entry, after official verification of the exported quantities, and after such verification of the amounts so claimed by examination of the records of the manufacturers as the chief officer of the customs may direct, but in no case shall such amount exceed that mentioned in the applicant's sworn statement.

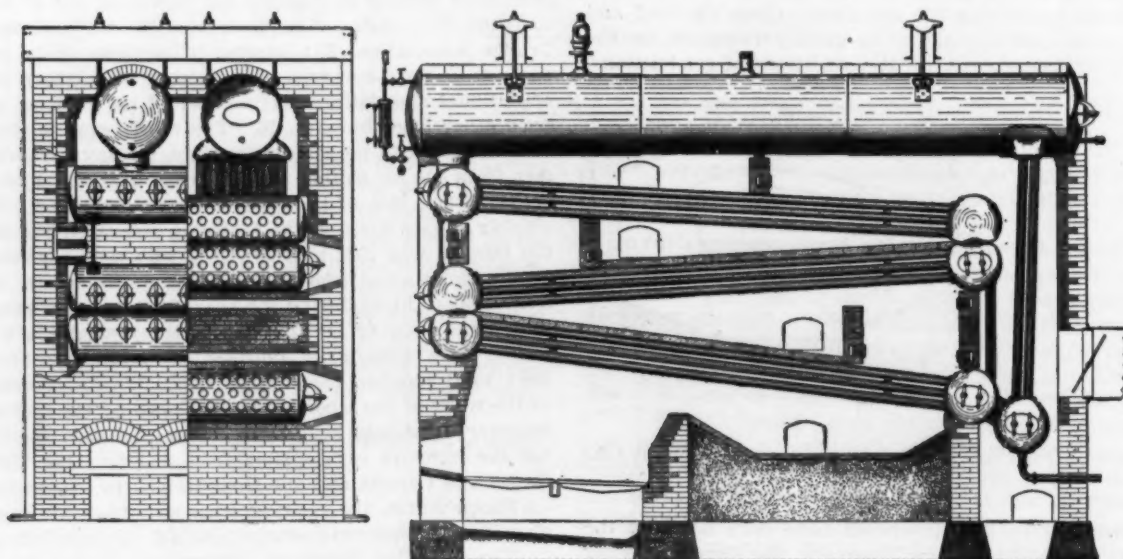
### The Vogt Water Tube Boilers.

The individuality of the new boilers brought out by the Henry Vogt Machine Company, Louisville, Ky., is to be found in the original disposition of the heating surface. In the courses of the water and gases of combustion the aim has been to insure the rapid circulation of the former and the thorough abstraction of the heat of the latter, both being features necessary to the best efficiency. Claims made are that the boiler is readily accessible for cleaning and inspection; that steadiness of water level is maintained, that the steam is discharged exceptionally dry and that the boiler is durable and safe.

There are two types of the Vogt boiler, one of which is shown in the accompanying engraving. There is some difference in the design of the two, but in the mechanical details of construction and the material used there is considerable identity. All the drums are cylindrical, have no flat stayed surfaces and are of open hearth steel of 60,000 to 62,000 pounds tensile strength. At the sides of the drums where the tubes are attached the shell is cupped outward, leaving a flat place around each tube, so that the tubes may enter normally to the surface with-

steam must travel before reaching the steam drums. This arrangement gives a very rapid circulation of the water, the consequence of which is a high efficiency in heat transmission, and at the same time it prevents the deposit of scale in the tubes and insures a practically uniform temperature of the water in the entire boiler, which obviates to a great extent unequal expansion and contraction of the various parts. Rigidity has been avoided in the construction of the boiler where it would be a disadvantage by interfering with the free expansion of each member of the boiler and thereby imposing strains which would tend to distort or loosen any of the parts or connections.

The fire tile baffles over the tubes as they are arranged provide several combustion chambers between each bank of tubes, which being surrounded by red hot fire tiles augment complete combustion of the gases before they escape to the chimney. The hot gases are caused to travel the length of the boiler three times and then to finally descend around the vertical rows of tubes in the rear of the boiler, through which the feed water is descending to the mud drum. These tubes are the coolest part of the boiler, and do much in abstracting the last



The Class C Water Tube Boiler, Made by the Henry Vogt Machine Company, Louisville, Ky.

out being bent. Between these flat extruded parts of the shell, the drum preserves its cylindrical shape, which makes for rigidity and obviates the use of interior stays. The great advantage of this part of the construction is the possibility of using perfectly straight tubes. These are of high grade material, lap welded, and are expanded into the drums into reamed holes, so that a substantial and tight joint is obtained.

The illustration shows the class C boiler. This has two upper steam and water drums extending from front to rear, the two affording a very large storage capacity for steam, which prevents sudden fluctuation in pressure and gives a very large steam liberating surface with a comparatively shallow body of water for the steam to escape through. The water level in the boiler is some distance below the center of the longitudinal steam drums, and fire tile incloses the drums some distance above the center, which leaves considerable superheating surface in the top drums, making it possible to obtain exceedingly dry steam.

The two longitudinal drums are connected at their front ends to the upper front cross drum and at their rear ends have headers from which a double row of vertical tubes descend to the mud drum. The mud drum is attached directly to the lower rear cross drum, with large openings between the two for the circulation of the water. The lower rear cross drum communicates with the front twin cross drum by a rising inclined bank of tubes, and the front and rear twin cross drums and the rear twin and upper front cross drums are similarly connected, thus completing the path that the water and

available amount of heat from the gases before they pass to the stack.

In the class D boiler the arrangement is somewhat different. There are no longitudinal steam drums, but in their stead a large cross drum is provided at the rear of the boiler, the water level in which is maintained at slightly below the center. The feed water enters the bottom of this drum and descends through the vertical rows of tubes to the mud drum which is attached to the lower rear cross drum in much the same manner as in the class C boiler. There are but two banks of inclined tubes in of tubes to the mud drum, which is attached to the lower bank, then through the twin header in front, and finally through the upper bank to the steam drum at the rear. A system of vertical baffle plates in this boiler causes the hot gases to pass three times vertically across all the horizontal tubes and then finally to pass over the vertical rows of tubes at the rear, thus abstracting the greatest possible amount of heat before the gases are discharged.

The brick on top of the boiler does not rest on the tubes, but is supported on fire tile, which in turn rests upon iron bars, which are imbedded in the brick work incasing the boiler. These iron bars are covered with fire tile all around, so that the fire cannot reach them or in any way injure them. Both the class C and class D boilers are supported from the floor independently of the brick work. The class D boilers have been designed for small units up to 200 horse-power, and are specially intended for locations where the head room is not sufficient to admit the class C type. The heating surface of both



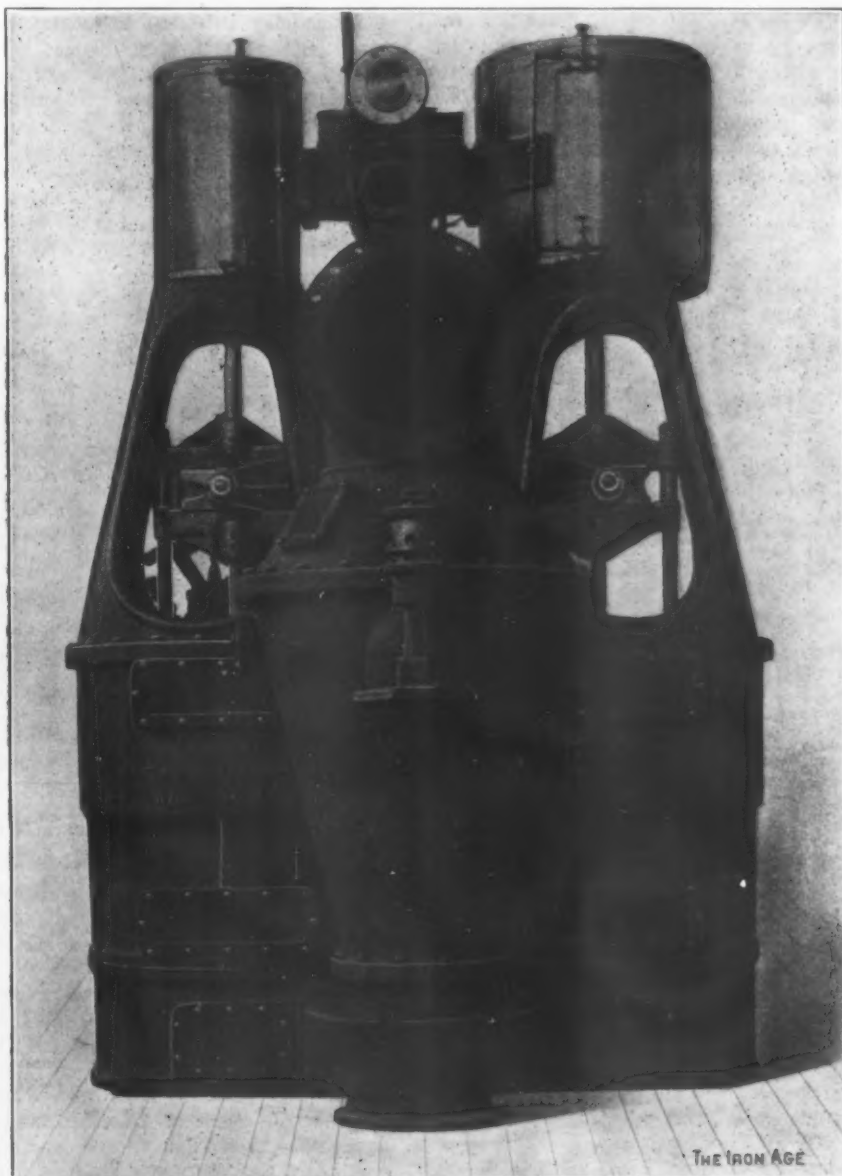
types is based on the usual rule of 10 square feet per horse-power, but by virtue of the high efficiency claimed for the boiler, due to the large areas for the circulation of water and the arrangement of heating surface, it is stated that the boiler will give excellent service even when forced to double its rated capacity. The Vogt boiler has only recently been placed on the market generally, but has been built in limited numbers and tried out in practice during a period covering the last four years, during which it has been perfected to the form now offered.

#### A New Blake Jet Condenser.

The decision as to which is the better, a jet or a surface condenser, for condensing the exhaust steam from a

twin vertical steam cylinders when operated noncondensing and the exhaust steam utilized. Being vertical in construction, all pistons wear equally on all sides. The water cylinders are composition lined and the water pistons, or bucket heads, are of the same material with fibrous packing. The heads, packing and water valves are easily accessible through a hand hole on either side of the pump. The water valve seats and guards are of composition and the studs are of Tobin bronze. The valves are held in place by lock nuts and are operated without the aid of springs. The water piston rods are of Tobin bronze and the steam piston rods of steel.

The injection stem and cone are also of composition, and access to the interior is afforded by a hand hole on the side of the condenser. The amount of water passing



A Small Type Twin Vertical Jet Condenser, Made by the W. H. Blake Steam Pump Company, Hyde Park, Mass.

certain engine is affected by the particular circumstances surrounding the case. There is no question but that each has its advantages, and one is often preferred over the other on account of some special consideration. Realizing the desirability of providing for a choice in the selection of condensers, the W. H. Blake Steam Pump Company, Hyde Park, Mass., has perfected a very complete line of both types, ranging in capacity from 600 to 40,000 pounds of steam per hour. From this series the jet condenser shown in the accompanying illustration was selected.

In this form of small type twin vertical air pump and jet condenser the air pump is made with compound steam cylinders when it is to be operated condensing, and with

through the condenser is regulated by the vertical adjustment of the injection cone, which acts as a nozzle to form a thin spray, which is thrown out at an angle of 45 degrees. This falls upon a succession of shelves, thus forming secondary sprays through which the exhaust steam from the engine must pass. Instantaneous condensation results, with great economy in the use of water. A perforated copper plate is substituted for the shelves when the force of the injection water is not sufficient to produce spray. The combined volume of injection water and condensed steam flows by gravity through the bottom of the condenser into the pump.

To prevent flooding of the engine the condenser is provided with an independent vacuum breaker attachment

secured to the side of the condenser. This is arranged so that when the water reaches the level of the float chamber the float is raised and by great leverage forces the check valve from its seat, allowing an inrush of air which instantly breaks the vacuum, thus preventing further suction of water into the condenser and consequent flooding of the engine.

The construction of this machine is exceedingly simple and all parts are readily accessible. It is very compact, requiring little floor space, and is operated by the Blake patent automatic valve motion, which is one having no complicated mechanical adjustments.

#### A Waterbury Farrel Heavy Thread Rolling Machine.

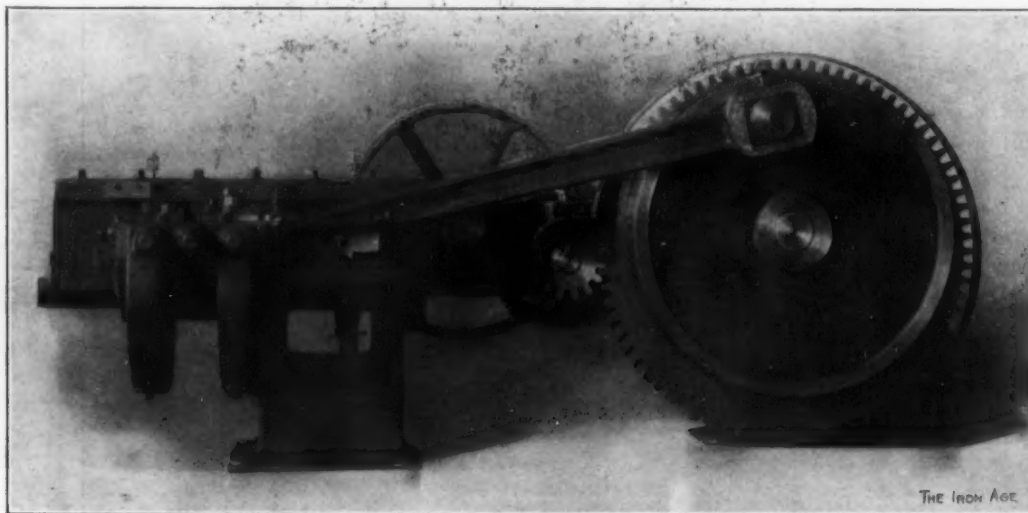
Rolling threads upon wire and screw blanks is a rapid and economical process used often in preference to cutting the threads with ordinary threading dies. In this process the blank is rolled between dies whose surfaces are grooved to suit the shape of thread and at an angle corresponding to the pitch of the screw. Stock is displaced during the operation, but none of it is removed, consequently the finished screw is somewhat larger in diameter than the blank. For doing this work the Water-

bury high speed engine direct connected to a 200-kw. generator giving a voltage of 120 at 200 revolutions per minute; another 250 horse-power engine of the same type direct connected to a 150-kw. generator, and an 80 horse-power simple engine direct connected to a 50-kw. generator, running at 275 revolutions per minute.

#### Henry C. Frick on Modern Business Methods.

From an article on Henry C. Frick by James Creelman, published in the *New York World*, the following extracts are taken, giving Mr. Frick's views on present business methods:

"The tendency of our modern industry and commerce is sound and helpful to the whole human race. Such evils as may exist are incidental and temporary. The great achievement of industrial enterprise on a large scale is the prevention of waste of human effort. By the massing of capital useless competition is eliminated, administrative, inventive and manual skill are combined with the resources of nature on big lines, and in such an ordered system brains, energy and character find their true level. If men are to have shorter hours of labor, if the raw wealth of the world is to be utilized to the high-



The No. 7 Reciprocating Screw Threader, Made by the Waterbury Farrel Foundry & Machine Company.

bury Farrel Foundry & Machine Company, Waterbury, Conn., makes a line known as reciprocating screw threading machines. These are made in six standard sizes which roll respectively the following maximum diameters of blanks:  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , 1 and  $1\frac{1}{2}$  inches. The largest, No. 7, is the one herewith illustrated, and is probably the most powerful thread rolling machine ever made. As mentioned in *The Iron Age* of January 5, one of these machines has been furnished to roll the heavy bolts which will be used in the new Pennsylvania tunnel under the Hudson River at New York.

The machine has one stationary die and one moving or reciprocating die. The blanks are introduced between these dies and are rolled between their faces, perfect threads of uniform size being rapidly formed. The dies for this work are easily made and are very durable. The No. 7 will handle about 20 blanks per minute and will roll a length of thread up to and including  $3\frac{1}{2}$  inches. The driving pulley is 43 inches in diameter, runs at 240 revolutions per minute and is geared to the crank disk with a ratio of 1 to  $13\frac{1}{2}$ . The machine occupies a floor space of 77 x 173 inches and weighs about 18,700 pounds. It is provided with roller bearings to reduce friction, a quick return movement for the slide and an improved knock-off.

The electric plant of the new office building known as "Sixty Wall," in New York City, will have a capacity of 400 kw., furnished by the General Electric Company. There will be one 350 horse-power tandem compound

est degree and the intelligence and strength of the race are to tell as they should in an advancing civilization, it is certain that we have entered the threshold of better times.

"The tendency of our modern methods of commerce and finance is to give courage and stability to enterprise. No important business has to stand alone, exposed to the shocks of fortuitous conditions. It can command credit, support and sympathy from the world about it. Gradually the whole fabric of American industry, commerce and finance has grown into intersupporting relationships, the result of a sensible understanding of the present and the future. Conditions in this country were never more sound and wholesome, the outlook never more encouraging than at present.

"It is true that the development of modern methods of business has disturbed old conditions and that there has been some consequent suffering. That, however, is an incident of progress. It is a temporary phase of a great, necessary and wholesome growth. The vital fact is that the instrumentalities of production are increasing; that vast works impossible 25 years ago are easily accomplished to-day; that the field for invention, skill and energy is broadening; that wages are higher and hours of labor shorter, and that the productive forces of the country and the financial credit back of them are not at the mercy of chance, and one blunder by one man cannot arrest progress or bring ruin to a whole community. This is just as important to the manual laborer as it is to the capitalist."



## An Automatic Stock Line Recorder for Blast Furnaces.\*

BY J. E. JOHNSON, JR., LONGDALE, VA.

Of the many items of information necessary to the successful management of the blast furnace few are more important than knowledge of the location and movement of the stock line—whether the furnace is full and has been kept so; whether the stock is settling regularly or slipping; and, if slipping, how often it has slipped, at what times and how far at each time. To obtain these data a man is sometimes stationed at the top of a pair of mechanically filled furnaces simply to watch and gauge them by hand in the old fashioned way. A more recent practice is the suspension of test rods from ropes leading over pulleys to the ground level, where the ropes are

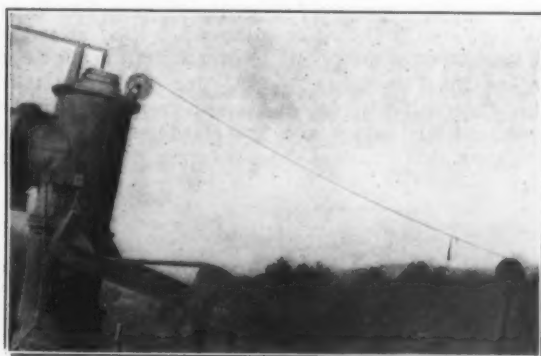


Fig. 1.—The Arrangement of the Chain Supporting the Test Rod.

wound on small drums with graduated peripheries and provided with crank handles, whereby the skipman or some other person can quickly and conveniently gauge the position of the stock line in the furnace. I believe the credit for this great improvement belongs to McClure & Phillips of Sharon, Pa., who were, as far as I know, the first to apply it, and who have a patent for it. The valuable indications gained by application of the Uehling pyrometer to the down comer are not to be ignored; but the information thus furnished is somewhat indirect, and there is no scale for the translation of "top temperatures" into "feet down." Moreover, this apparatus as a whole is delicate, and the cost of its installation and maintenance is high.

If the record furnished by the Uehling pyrometer is not in the most desirable form the test rods, on the other hand, give no record at all, except through the memory or notes of a man who, to say the least, is not gauging continuously, and who may omit to report an improperly low stock line, if it be due to a fault of his own.

The object of the present paper is to describe an apparatus which, it seems to me, meets all these objections, being simple, durable and inexpensive, and giving by its continuous and automatic action accurate information concerning the stock line for every minute of the day.

This device† consists essentially of: (1) A test rod suspended at its top by a chain, but normally resting on the stock and descending with it except when the bell is open; (2) a simple mechanism for lifting this rod out of the way of the incoming stock at the latter period, and (3) an attachment for recording its motion on a reduced scale.

\* Presented at the Washington meeting of the American Institute of Mining Engineers, May, 1905.

† This device is the subject of United States patent No. 677,665, dated July 2, 1901, and issued to me. In my judgment, however, it would not be right to omit here a recognition of the issue to David Baker, May 14, 1901, of United States patent No. 674,112, for a stock line indicator, operated by the lowering of the charging bell. This patent contains no suggestion of a recording attachment and does not cover the use of an independent cylinder to operate the test rod, so that my apparatus in its present form does not infringe in any way upon Mr. Baker's invention. This legal question, of course, is not to be discussed in the *Transactions* of the Institute, and I desire here only to acknowledge Mr. Baker's work and to say that the first knowledge I had of the existence of his patent was after my own had been allowed. Whether to this day he has heard of mine I cannot say. Evidently we were working at the same time, he in Chicago and I in Pittsburgh, upon the same problem.

### Some Special Features of the Furnace.

Before describing these parts in detail certain special features of the furnace to which this apparatus is now attached should be mentioned.

1. The first is the charger, which has been described and illustrated in the recent paper of T. F. Witherbee read at the Duluth meeting of the Institute. It should be added, however, that the hopper now used is much deeper than that shown in Mr. Witherbee's paper.

The central off-take pipe for the gas makes it easy to locate the test rod so that it will hang vertically almost in the center of the furnace, while the special setting of the hopper in conjunction with the type of bell used makes any other position less convenient.

2. The furnace plant is supplied with water under a natural head of about 60 feet, which is used to operate the bell, the cylinder being placed in a pit below ground level in order both to take full advantage of the head and to prevent freezing. Since it is not practicable to have the center of the cylinder under the end of the bell lever the rope running up from the former is carried over a sheave, so as to give it the necessary direction. This sheave is supported on a pair of I-beams fastened to the furnace at one end and supported on a pipe column at the other, about 8 feet above the ground—a convenient height for the support of the mechanism and the clock case of the recorder.

### Description of the Apparatus.

The arrangement of the chain supporting the test rod is clearly shown in Fig. 1. A pulley about 12 inches in diameter is carried in a double bearing, resting on the cap of the central off-take pipe. The chain comes up from the test rod (which is simply a 1½-inch round iron bar about 18 feet long), passes through a hole in the cap and around the pulley supported thereon. Thence it goes to a similar pulley carried on a piece of 4-inch pipe, held by a bracket on the side of the furnace and stayed to the filling plates, and passing over this pulley it turns straight down. A short distance below the second pulley the chain is fastened to a piece of No. 10 wire, which runs the rest of the way down. Chain was used at the top



Fig. 2.—The Recording Mechanism at the Bottom of the Furnace.

because it was doubtful whether wire or wire rope would stand the combination of heat and small pulleys. The chain is 3-16 inch in size, and it has given no trouble whatever, though old and nearly worn out when first installed. Fig. 1 shows about half of the center pipe at the left, and a portion of the bell lever at the bottom of the picture. The photograph was not "square," having been taken from a rather precarious position on top of the fillers' house—the only available point.

The construction of the mechanism at the bottom is shown almost completely in Fig. 2, except that the operating cylinder, being in the pit with the bell cylinder, is of course out of sight. The wire from the test rod is wrapped around a narrow drum, or double flanged pulley,





**The Satisfactory Results Obtained.**

The completeness of the record is more noticeable after a little experience with the device than would be expected from a cursory examination of the chart. It is practically impossible to "beat" the instrument and make it show a good record when a bad one was called for by the circumstances, a fact which the fillers themselves have come to appreciate.

The first night the machine was in operation the night shift were late in coming out, and knowing that the machine was operated by the opening of the bell the top filler opened the bell without waiting to put anything on it, intending to show thereby that they had already put up a charge. Of course the test rod simply rose and descended again to its former level, indicating perfectly what had been done. The admonition delivered the next morning, with an accompanying explanation of the futility of such tricks, has served to prevent their repetition.

So far there has been no cost for attendance and repairs. The man who oils the hoist and bell machinery once a day also puts a little oil on the working parts of the recorder below. (The pulleys on top are not oiled at all on account of the dust.) The furnace foreman puts in a new chart, winds the clock and puts ink in the pen once a day, and this is absolutely all the attention the apparatus receives. It was feared at first that the top

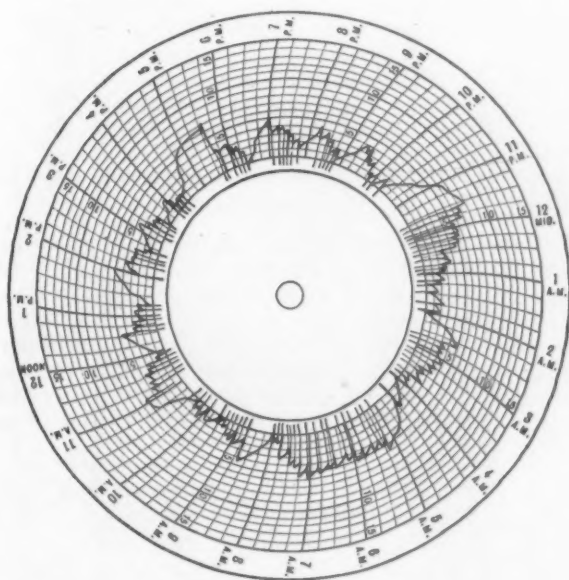


Fig. 4.—Chart from Stock Line Recorder at Furnace No. 2, November 10-11, 1904.

of the furnace being rather hotter than good practice permits trouble might arise with the chain and the test rod, and also there being in the gas considerable zinc oxide vapor, which builds upon whatever it touches, that this would cause trouble by clogging the chain, or perhaps adding to the weight of the test rod, but these fears have proved groundless.

The circumstances under which the apparatus was installed at the plant described were, as the above statements show, less favorable than the average; yet no difficulty has been encountered hitherto, nor is any anticipated.

**Suggestions for Those Who Use the Apparatus.**

In the hope that the device described may be utilized by others a few points as to its general design may not be amiss:

1. The cylinder should be of ample size to lift the test rod and still have a good margin of strength; for if after the falling back of the stock subsequent to a slip, or from any other cause, the test rod should be partly buried in the stock, the cylinder should be strong enough to pull it out.

2. The pipe for carrying the operating fluid—steam, air or water—to the cylinder should be small for the size of the cylinder, or else well throttled, so that the

piston will ordinarily travel at a moderate speed so as to avoid heavy jerks and inertia stresses, while at the same time if the rod should be stuck in the stock after a slip, when the piston failed to move at first, the pressure would run up rapidly to the point at which it would be able to overcome the resistance and pull the rod out.

3. Some means for cushioning the piston at the end of its stroke should be provided. In the case described this is accomplished by a helical spring around the piston rod, which the nut on the latter strikes a few inches above the bottom of its stroke and compresses; but a better method would frequently be to close the lower end of the cylinder and put a small vent for the escape of the air expelled by the downward stroke of the piston at such a point that the piston would overrun it before reaching the end of its stroke and cushion on the entrapped air, very much after the manner of a Corliss dash pot, but more slowly.

4. The cylinder should preferably always be so arranged that the pressure will only be applied during the time that the bell is open, since this interval is short and the tightness of glands, pistons, &c., is of little consequence as compared with those which are under pressure most of the time. This can frequently be arranged by connecting the recorder cylinder direct to one or the other end of the main bell cylinder, or in any case by the use of a three-way valve operated by a connection from the main bell cylinder valve.

5. Where the bell cylinder is situated on the side of the stack, or at an inconvenient position for the recorder dial, the only change required will be to put the cylinder and multiplying shaft wherever required and lead a wire to transmit the reduced motion of the shaft and test rod to a convenient position for the clock dial, the wire operating a lever directly connected to the pen arm and being kept tight by a weight on its end. This arrangement is indeed simpler than the one here described.

6. The maximum travel of the test rod is a subject requiring some thought, the natural tendency is to make it as long as possible, but I believe that 20 feet will be sufficient in most, if not all, cases. If the stock line has been down more than this through any fault of the fillers it is sufficient reason for drastic measures without knowing how much further it has been; and if it has slipped more than this personal attention is demanded, and the added work of gauging by hand is very slight. On the other hand, the size of cylinder, ratio of gearing and inertia of parts all increase with increase of stroke, and the increased closeness of the scale on the chart, unnecessary for perhaps 99 per cent. of the time, is a distinct drawback.

7. One point of minor importance is that the slight jar on the clock case, due to the bottoming of the piston, has a tendency to loosen the dial on the clock spindle, and may allow it to lag or hasten and thus spoil the accuracy of the time record. The dial is only held by slight friction, and a very small jar is sufficient to loosen it. The remedy is to have a small thumb screw through the central boss of the dial, or to have the boss split longitudinally and drawn together by a slightly conical screw collar milled outside, the tightening of which causes the dial to have a firmer grip on the clock spindle.

Several types of arrangement will probably be developed for the apparatus, and some of its details may be modified past recognition if it should be as extensively applied as its usefulness seems to warrant, but in the great majority of cases the local design will be a matter of small difficulty if the foregoing suggestions are followed.

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A microbe recently discovered by a resident of Italy is said to devour all zymotic germs in sewage, and then to die and be dissolved. An automatic biological tank, suitable for use in houses, has been invented, wherein this microbe operates to transform the sewage into an odorless, colorless liquid, perfectly innocuous to animal life and which may therefore be allowed to flow freely into street drains and thence into the rivers. This transformed liquid has been analyzed and pronounced "clear water, but undrinkable."

### The Russian War Ship Contracts.

Speaking with some indication of accurate knowledge the *Wall Street Journal* says:

"There is no basis for the statement that Charles M. Schwab has secured from the Russian Government gigantic contracts involving the rehabilitation of the Russian navy. Mr. Schwab has received assurances from the Russian Admiralty that when the time comes for awarding contracts for the construction of fighting vessels a large percentage of the work will fall to the Bethlehem Steel Corporation.

"The statement that the Bethlehem Steel Corporation would alone undertake to rebuild the Russian navy is

### The Double Friction Coil Clutch.

Great strength and power transmitting capacity were sought in designing the double friction coil clutch, and upon these features the greatest emphasis is laid by the manufacturer, the Double Friction Coil Clutch Company, 42 River street, Chicago, Ill. The clutch is made for all varieties of service, high and low power and either high or low speed. There is some difference in the construction of clutches for the different kinds of service, but the principle is the same in all. The clutch runs immersed in oil, and the rubbing parts are thereby saved from any material wear. No wood or soft material is used, as a consequence of which some force is given to the claim

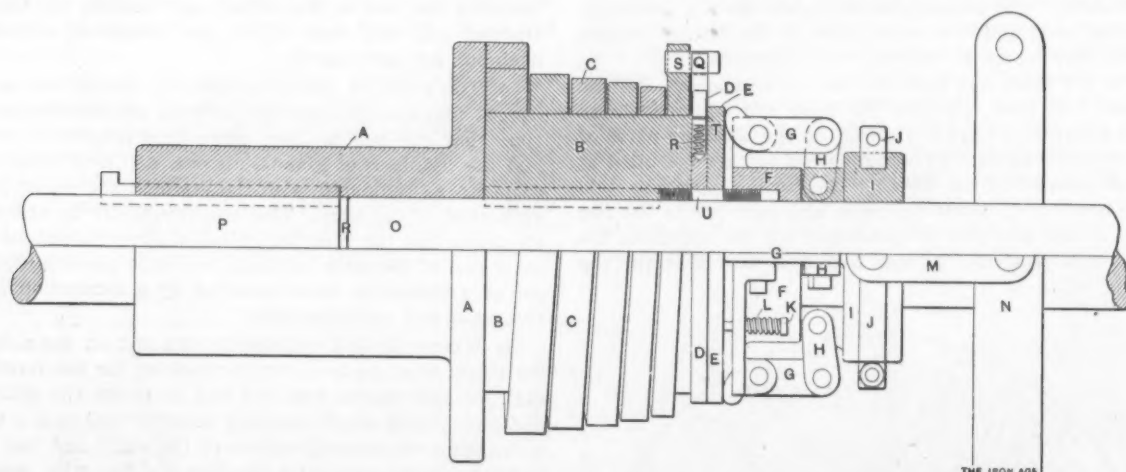


Fig. 1.—Elevation, Partly in Section, Showing the Double Friction Coil Clutch with Protecting Case Removed, and in Its Engaged Position.

absurd. Ever since the organization of the company it has been crowded, at times uncomfortably, with unfilled tonnage, and it would require many times its present capacity to turn out sufficient armor plate to meet the expected requirements of the Russian Government. While it is true that Mr. Schwab will undertake to build for the Russian Government war ships that will place the present first-class fighting machines in the second class, other shipbuilding companies in this country as well as abroad, will receive a fair share of the rehabilitation work.

"Several million dollars has now been appropriated for enlarging and improving the plants of the Bethlehem Steel Corporation, much of which will be used in the building of ordnance machinery. It will be many months before these extensions are completed, and consequently the company is not in a position at present to turn out fully equipped battle ships on such a gigantic scale as reported. It is said that in the event of the Bethlehem Steel Corporation securing more work than it can possibly handle within a reasonable length of time, further appropriations for extensions will be in order."

Reflected solar heat is used to obtain very high temperatures in a new furnace designed by a French inventor. With it he expects to obtain a temperature of 3500 degrees C., which is higher than that of the electric furnace. The reflector is built up of more than 6000 mirrors arranged side by side in parallel rows, each measuring about 4 x 5 inches. The width at the top is 35 feet, at the base 18 feet and the depth 35 feet. With a previous and much smaller furnace, constructed on similar lines, a temperature of 2000 degrees C. was obtained.

The huge turbines now under construction for the 25-knot Cunard steamships have required a large number of special machines for the performance of the various operations. One of these is a boring machine built by Thomas Shanks & Co., Johnstone, Scotland. The total weight of this mammoth machine is 95 tons and the over all length is 75 feet. The base plate is 17 feet wide and 53 feet long, while wings are bolted on to serve as supports for the overhanging parts of the turbine casings.

that the expense for repairs and maintenance is extremely small. The clutch is particularly adapted for hard and rough work where there is frequent stopping and starting which must be done practically instantaneously. It is distinctive in design, quite unlike anything that has ever been made before, and there is no possibility where it is used of accidental contact which would endanger the lives of the workmen. One of its

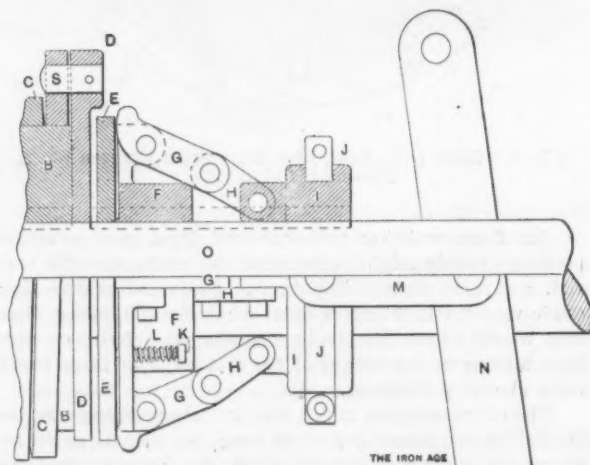


Fig. 2.—Detail of the Controlling Mechanism in Disengaged Position.

greatest advantages is its compactness, which results in a large saving of space.

The mechanism of the clutch is shown in the accompanying Fig. 1, where the clutch is shown with the protecting case removed. N is the operating lever which is attached to extension links M. The latter are, however, almost always omitted, the attachment being made directly to the operating collar G. M are only used when it is necessary to find a convenient place to secure a fulcrum. The link H is attached to the sliding collar I at its inner end and at its outer end to the foot lever J, which acts on the friction plate E, this in turn bearing



on the latch plate D. D revolves freely on the shaft O, and when pressure is brought to bear upon it friction is caused between the plate E, latch plate D and the end of the drum B, which is made of chilled iron and is as hard as glass. This is an auxiliary friction which retards the free movement of the latch plate D and brings the latch Q to bear on the coil pin S, which causes what is termed the driving friction between the steel spring coil C and the chilled drum B. The coil C is mounted on the hub A, which is keyed on the driving shaft P. One end of C is connected to a flange on A, and the other or free end carries the pin S. The drum B is keyed on the driven shaft O and rotates with it. Shaft O may be the driving shaft and P the driven one, in which case the action is reversed, the coil being held stationary while the drum revolves. A 10-pound pressure upon the operating lever will produce a pressure of about 64,000 pounds between the coil and the drum.

The released position of the clutch is shown in the detail, Fig. 2, which is lettered to correspond to Fig. 1. The following is a complete list of the parts in order, most of which have already been referred to: A the hub, B the chilled drum, C the coil, D the latch plate, E the friction plate, F the toggle yoke, G the foot levers, H the

work equally well on either horizontal or vertical shafts. Sometimes instead of placing the two clutches on the same shaft they are placed one above the other on separate shafts where it is desirable to have one shaft standing and the other running, and *vice versa*. In short, the clutch is applicable to any use where the requirement is an ability to connect or disconnect a driven member from a driving member.

### Birmingham Notes.

BIRMINGHAM, ALA., May 1, 1905.—An important change has been made in the management of the Tennessee Coal, Iron & Railroad Company. Vice-President and General Manager Charles McCreary has resigned his position. He goes to the Woodward Iron Company as chairman of its board to-day. His successor has not so far been named. Mr. McCreary has held the position of general manager of the Tennessee Company for more than three years, and has fully maintained his reputation as an accomplished and able ironmaster.

Mention has been made of the firing up of the Tennessee Company's Furnace No. 6 at Ensley. The cost of the furnace is put at \$500,000. The foundation of the

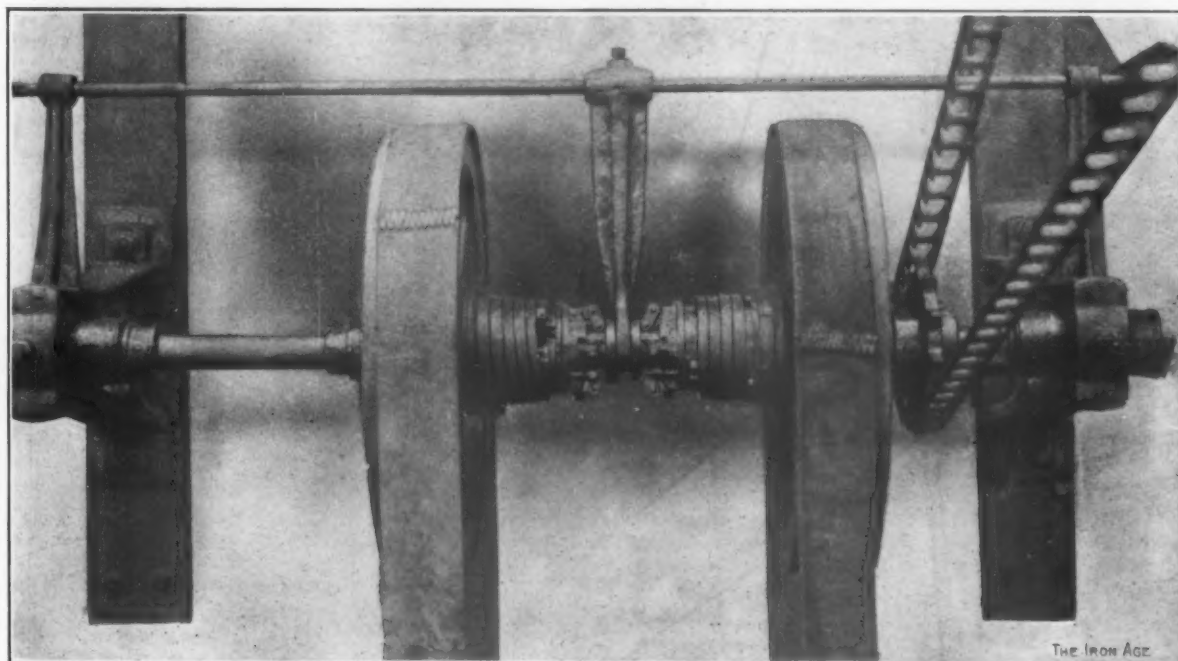


Fig. 3.—A Combination of Two Double Friction Coil Clutches Alternately Engaged by One Shifter to Give Direct and Reverse Drives.

links, I the sliding collar, J the operating lever collar, K the pull back stud, L the pull back spring, M the extension links, N the operating lever, O the driven shaft, P the driving shaft, Q the latch, R the latch spring, S the coil pin, T the latch pin and U the adjusting sleeve.

At present the clutch is made in 16 sizes, capable of transmitting from 3 to 600 horse-power at 100 revolutions per minute. The smallest clutch has an outside diameter of  $7\frac{1}{4}$  inches, and occupies a length on the shaft of  $11\frac{1}{4}$  inches. The largest is  $36\frac{3}{8}$  inches in diameter, and takes up a total length on the shaft of about 55 inches. The intermediate sizes increase at about a uniform rate, nicely covering a range of sizes from which a selection may be made to suit almost any case. A feature of the clutch is that it can be adjusted to slip at any desired horse-power without damage, for there is nothing about it to burn out.

The adaptations of the clutch are many. Outside of the straight plain transmission where the driven shaft runs in only one direction or is stationary, there is another common arrangement in which two clutches are combined, and rotation of the driving shaft may be had in either direction or the shaft may be allowed to stand idle, one shifter being sufficient for all three conditions. Such a combination is shown in Fig. 3. The clutches

furnace is 13 feet below the surface of the yard and is built of solid concrete. It is 20 feet in diameter at the bosh, and 85 feet high. There are four Kennedy two-pass stoves, 21 feet in diameter and 93 feet high, each containing 54,000 square feet of heating surface. There are ten 250-horse-power vertical water tube safety boilers connected with the furnace, and the blowing engines are the latest improved Mesta vertical pattern, and are independent compound. The total capacity of the three engines supplying pressure is 57,000 cubic feet of free air per minute. The steel plate, angles, &c., used in the furnace shell, stoves, stack and stand pipe, mains, buildings, &c., were made here. The first actual work on the foundations was commenced April 30, 1903. The architects and builders of this furnace regard their work with much complacency and anticipate a career of great success for this new born furnace factor in this district, and, it might be added, in the South.

Pennsylvania parties interested in the Sayre Mining & Mfg. Company are here to inspect their holdings and to attend a meeting of the directorate. Speaking of the district, Mr. Sayre said: "It isn't safe for a man who owns property in the Birmingham district to talk about the prospects. To tell the truth would expose him to the risk of losing his reputation for veracity. All that

I have to say is that Birmingham is going ahead wonderfully, and that all men who own property in the district believe in Birmingham and its future. So far as our own company is concerned we are more than satisfied with results."

### The St. Paul Mechanic Arts High School.

The value of educating hand and head simultaneously is becoming more and more appreciated and the principals of manual training schools testify that proficiency in mental work increases with manual dexterity, and *vice versa*. An institution in which this dual training is applied is the Mechanic Arts High School in St. Paul, Minn. Here boys and girls are taught to do practical work with

tic alertness of the boys and girls enrolled in it testify to the correctness of the proposition. This system of adding manual work to academic work instead of substituting it hour for hour has been in operation for ten years and has demonstrated that the more strongly the academic side of the student is developed the more efficient he becomes also in mechanics, and *vice versa*.

The school is housed in a building that is insufficiently lighted, inadequate in size and not properly arranged for the work that is to be done. Eight times in its existence the school has been suppressed by political influence, but each time it has found champions sufficient to bring about its re-establishment. Notwithstanding these handicaps remarkable work has been turned out and is being produced to-day by the several hundred students enrolled.

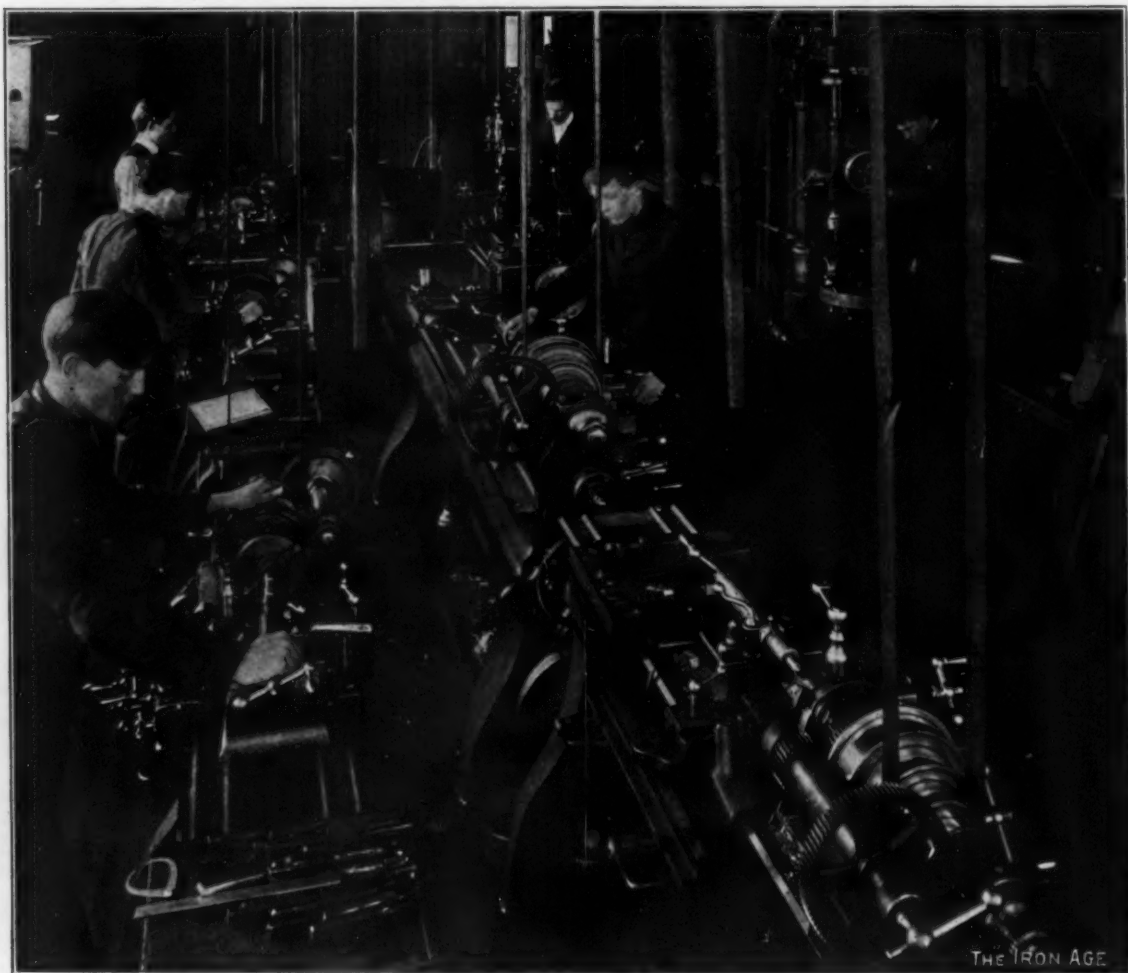


Fig. 1.—Machine Shop of the St. Paul Mechanic Arts High School, with Students at Work.

their hands while they are studying the usual high school subjects from text books.

Instead of substituting a certain number of hours of manual work for a corresponding number of purely class work, as is ordinarily done in the schools that have manual training departments, the St. Paul school, working on the theory that the hand work should increase the efficiency of the brain work by affording an exhilarating mental rest, adopted the plan of adding the shop work to the usual number of hours of study in academic branches carried in any other high schools. In other words, 32 periods in academic studies—the ordinary high school requirement—are supplemented by 8 in shop work and 8 in drawing, or 16 in addition to the ordinary academic work. It is held by the principal and his coadjutors that both academic and manual studies are necessary to the development of the mind, and that each makes the other easier and more tasteful to the young student; that what the world wants is not men who are more acute mentally or more dexterous mechanically, but men both mentally acute and mechanically dexterous, and the character of work done in the school and the enthusias-

The whole purpose of the manual training department as it is outlined and followed by George Weitbrecht, the principal, is to give the young people under his charge the means of making useful things outright, instead of merely teaching them to work with their hands to illustrate a principle, as was the custom in the earlier days of manual training. In mechanical drawing, for instance, the work from start to finish is that of making practical working drawings from real objects, and not from pictures of objects; and step by step the mathematical problems involved in mechanical drawings are developed by an analytical method, instead of being put before the student as a bewildering and distasteful task. About two hours a week are devoted to drawing, and drawing is a part of the course through the whole four years, the graduates being as a rule sufficiently proficient to take positions as mechanical draftsmen. Free hand drawing is taught in the same practical way, and this work includes drawing not only on paper but on wood, leather, textiles, &c., including designing of hangings, portières, cushions, designs for wood carving, furniture, &c., the purpose being to develop the latent talent



of the student in creative work. Four periods are devoted to modeling in clay. The electrical course is in the hands of a practical electrician, and the young men and women are taught not only the theory but the practice as well, including laboratory and shop work and elementary electrical engineering. Students are required to measure resistance, electromotive force and currents, to determine efficiency of motors, to take cards from and determine horse-power of engines, to calibrate volt meters, ammeters and other electrical machines and to make life and efficiency tests of electric lamps. The Northern Pacific Railway, for instance, intrusts the tests of its lamps to this school, and from them places orders for very large equipments. The students are also taught to do wiring, and are given a practical course in electrical shop work, including the making of apparatus for carrying on the work of the department, installing

In the forge shop the boys are taught practical blacksmithing, including the tempering and forging of lathe tools, and make their own tools for use in the shops of the school. During their pattern making course they produce complete patterns for dynamos, lathes, small engines and the like. The wood working department is in many ways the most interesting because of the enthusiasm with which the boys take up this work. The head of the department is a practical carpenter and cabinet maker. Beginning with first principles the students are gradually led up to designing and creating original work, and the art furniture built by students ranging in age from 13 to 16 years is of exceptional merit.

Mr. Weitbrecht, the principal, when leading one through the school unconsciously indicates the secret of the school's success—namely, his own enthusiasm and energy. Another element of the success of the school,

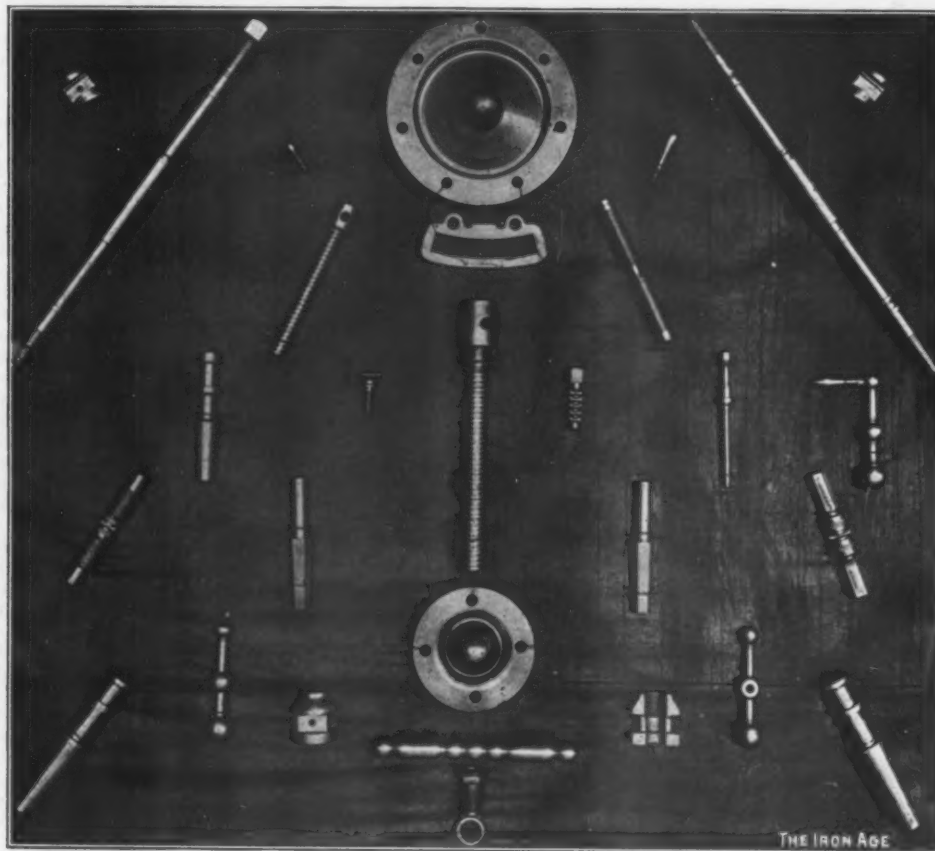


Fig. 2.—Specimens of Machine Work by Students of the St. Paul Mechanic Arts High School.

switchboards, storage batteries, electrical lamps, rheostats, &c.

A course in chemistry is also provided, and one in surveying, but the courses which will mostly interest the readers of *The Iron Age* are those in which practical machine shop instruction is given. The boys are taught the use of lathes, drills, planers and machine tools for working in both wood and metals. The instructor of the department is a practical mechanic, and he states that the work turned out by his boys is fully up to the average standard of machine shop practice. The boys in this department, for instance, built a 10 horse-power engine complete, except its fly wheel, and have also assembled and erected most of the machine tools used in the plant. Many wood turning lathes used in the school have been built by the boys in the machine shop. Illustrations are herewith given of a section of the machine shop with students at work, Fig. 1, and of specimens of machine work which they have turned out, Fig. 2. Throughout this work the utmost efforts are made to develop the inventive and creative powers of the students rather than to encourage them to become clever copyists of other men's work. A display of machine work made by the young people in this school was given a gold medal at the St. Louis Exposition.

and one which leads to the immediate employment of most of the graduates at good wages in useful crafts, is the fact that instructors in each department have been taken not from other schools and academies but from workshops. The theory is that the instructors in the mechanical departments are there to teach mechanics, and that the academic departments can take care of the niceties of grammar and rhetoric.

The illustrations accompanying this article were made from photographs furnished through the courtesy of Carl F. Bohn, one of the instructors in the school, who is head of the drafting department, and who also gives instruction in photography to his students.

The new German naval budget provides for the construction of two battle ships, one armored cruiser, two small cruisers, two gunboats and one mine laying steamer, as well as \$375,000 for submarine experiments. The total vote is for \$59,000,000, of which \$17,500,000 is for shipbuilding. The army budget provides for an addition to the peace strength of the army to the extent of 15,000 men, raising the total to 621,000 officers and men. A first installment of \$2,250,000 is appropriated for the acquirement of new rifles, which are to cost altogether \$20,250,000.

# The Savannah Supply and Machinery Meetings.

## Organization of the Manufacturers' Association and Convention of the Dealers.

In the last issue of *The Iron Age* the report of these meetings concluded with the transactions of importance up to Wednesday noon. As we went to press the delegates were at the very height of their holiday, sailing merrily out of Savannah Harbor enjoying a steamboat excursion tendered by the Merchants' & Miners' Transportation Company. In the evening a reception at the hotel served as an occasion for the outpouring of eloquence upon the delegates and their ladies by Hon. John Temple Graves, who spoke about the "Reign of the Demagogue."

### Joint Session.

On Thursday morning a joint session of dealers and manufacturers was opened by a discussion of the subject of

### Minimum Prices.

Joseph W. Wall of the Gardener Governor Company, Quincy, Ill., introduced the subject with a paper written from the viewpoint of the manufacturer, in which he said in part:

To get down to the main question, "What are the practical results?" I would classify them as follows:

1. The establishment of minimum prices has resulted in securing and maintaining the confidence, friendship and co-operation of the dealers.
2. It has prevented useless price cutting, created a uniformity in quotations and materially aided in the maintenance of prices.
3. It enhances the demand for the product of the manufacturer.

Taking up the first classification, I am led to this conclusion because of the present general feeling of satisfaction that exists throughout this class of trade. The instances of dissatisfaction are rare. They are confined, I am pleased to say, almost entirely to "cut price" houses—houses that pay little regard to any price restrictions. Their chief ambition is to get business regardless of what is necessary to do it. They cause the manufacturer no end of trouble. They are first to complain about prices and are the first to demoralize conditions. We cannot control them, neither do we believe that they are of a kind that appeals to an organization such as your own.

The legitimate machinery dealers seem universally to prefer the present system of established minimum prices to the old plan of underselling one another, with the consequent result of practically no profit.

It is a source of gratification to us to know that the best machinery dealers are so willing to co-operate with us; many letters have been sent us by them, expressing their appreciation of our plan of minimum prices. We treasure these kindly expressions and assure you that they have been a great encouragement to us in the maintenance of our policy.

Why should not the dealer be satisfied with the establishment of minimum prices? It not only protects him from interference by the manufacturer, but protects him also from price cutting by his brother dealers.

Nothing so discourages a dealer as to trade with a manufacturer who has a penchant for making various prices to the consumers. The practice is pernicious; it destroys the confidence of the dealer and tends to alienate more than anything else his friendliness and co-operation.

Machinery dealers are not in the business for glory; they are like the rest of us—they want a reasonable profit on the goods they sell. I believe "minimum prices" permit of this profit. They certainly do where margin between dealers' and consumers' prices is great enough, and in our business we have tried to make it ample. No complaints have ever been registered on that score.

If, also, the policy is properly carried out by the manufacturer it is an insurance against interference by the manufacturer and dangers of competition among the dealers themselves are minimized. Such a condition pleases the dealer, and when he is pleased it follows naturally that he is friendly to the manufacturer, so I reason that as one of the practical results. I do not mean to say that all dealers live up to price restrictions. Some of them are difficult to control—they will violate the restrictions whenever they feel so inclined—but if the manufacturer establishes minimum prices he should so carry out his policy as to command respect for it. He should promptly endeavor to correct all abuses. It is the following up of the abuses and making such efforts to curb them that proves the sin-

cerity of the manufacturer and secures the confidence of the dealer. A system that is abused with impunity becomes a mere nullity.

Our plan has been to correct abuses wherever we have learned of them. I believe this has been a "strong card" with us. The dealers have better respect for such a system, are more friendly to it and much more likely to co-operate in its strict enforcement.

It becomes necessary sometimes to make sacrifices to maintain it; we have made them. Some of the "price cutters" absolutely refuse to be "dictated to," as they term it, regarding selling prices, and turn a "deaf ear" to all our entreaties. To permit them to continue their violations destroys the very object of the system. In such case there is but one course left to the manufacturer—either withdraw quotations entirely, or put them on a consumers' basis. The latter alternative is the better. It proves very effective. The recreant dealer usually sees the error of his ways and becomes willing, in the future, to observe the restriction. In some cases the business may be lost and diverted to other channels, still this loss is infinitesimal compared to the good that is done.

I take the ground that when you show your loyalty by such actions, it creates a favorable opinion in the minds of those dealers whose trade you desire. I think that has been a result of our system.

I believe also that the establishment of minimum prices creates a better feeling between the dealers themselves. The frequent complaints in the earlier days by the dealers of their competitors in business were the rule then; they are the exception now. So, my friends, I cannot help but conclude from the relations that exist between us and the dealers that they have been created in a great measure by our practice of minimum prices; not the mere establishment of these prices, however, but the system followed in seeing them duly respected and observed. It is our loyalty to the system and the consequent loyalty to our dealer friends that has brought us good results.

It may be argued probably that other policies of our business are more effective in obtaining the confidence and friendship of the dealer, still I cannot escape the belief that the establishment of minimum prices has been a "strong link in the chain."

Regarding the second classification, the establishment of minimum prices has had a great influence in the prevention of price-cutting and the maintenance of prices. This represents the greatest practical result of the policy; at least it is the most manifest and the most easily traceable.

Minimum prices stimulate the dealer in his dealings with the consumer.

When he is assured that he is on the same footing as his competitor and both are protected alike by the manufacturer, the inducement to cut prices is curtailed. We have seen this. It is significant, too, that the complaints that formerly came from Jones and Brown and Smith about Green and White and Blue underselling them have practically disappeared; we rarely hear them now. This indicates that the dealers live up to price restrictions.

I argue that a dealer does not care very much what price he is obliged to pay for his goods if he knows that he is on a parity with his competitors. He wants this assurance and requires also that he be allowed a sufficient margin to entitle him to a reasonable profit. Dealers generally fix a certain percentage of profit that they feel they must get on every class of goods they sell. If the manufacturer changes his prices to them, they naturally change their prices to the consuming trade, so the percentage of profit will be relatively maintained.

I do not mean to have you infer from this that a manufacturer can ask "any old price" for his goods. His quotations to the dealer are regulated by competition. But I do contend that the establishment of minimum prices aids the manufacturer in maintaining his quotation, because the dealers are not continually exerting pressure to bring down his prices.

Price cutting begets price cutting; you have doubtless observed this. Let's take an example. A consumer will come to you with the story that he has a better quotation on the same goods from another dealer. If there are no established minimum prices, he is probably telling the truth. This consumer has been a customer of yours and you are anxious to retain his business. As a consequence you meet Jones' quotation, or you may go a little better. You get the order.

A short time afterward another case comes up. This time you are the lowest priced man and Jones is high. The customer happens to be an old customer of Jones. He tells



Jones about your price. Jones, not wanting to lose this man's business, meets your quotation, or goes even lower. You hear about it. What is the result? Both you and Jones feel that you cannot afford to continue to sell that line of goods on the margin of profit obtained in these transactions. You both write to the manufacturer, importuning him to make you better prices. The manufacturer may do it and may not, but that is immaterial.

The very fact that you made the first cut has induced Jones to cut later, and it may be through your solicitations that the manufacturer will cut his prices also. The consumer probably may be benefited, but surely the manufacturer is not; his profit is reduced. Nor are you and Jones benefited, for there is no assurance but what there may be similar repetitions of these same occurrences. This is not an overdrawn case. They come up frequently. You will both "cut" again and your percentage of profit will be again reduced.

The question is, How can they be avoided? I answer, By "the establishment of minimum prices." Doesn't it seem logical that if both you and Jones had been restricted by the manufacturer in your quotations to the consumer, and you both had lived up to the restrictions, that the price cutting would have been avoided? Both of you would have quoted the consumer the same price. The question of the order would have been one of preference to you or Jones. Such preference should have been secured, however, by other means than that of cutting price—by your selling ability due to your organization.

The minimum price policy creates also a uniformity in prices. That, if not a benefit, is at least a satisfaction. It simplifies the business of the manufacturer and the business of a dealer. It makes it easier for them both to deal with each other and with the consumer. It minimizes the bickerings over small deals: it saves constant complaints by consumers of better prices being made by other dealers; it does away also with many other petty annoyances that a dealer is subjected to in his dealings with the consuming trade.

A dealer can quote a consumer a price with an absolute assurance that he will not be under quoted, either by the manufacturer or by another dealer in the same line.

When a consumer jobs around for price and receives the same quotation from all houses, he naturally buys from the dealer for which he has a preference; in other words, it becomes entirely a matter of preference rather than price. And isn't this a great benefit in all trade transactions?

If you happen to have a good friend who does his trading with you and in his trading buys a certain product which he finds later he could have bought from Jones across the street at a little better figure, he naturally becomes dissatisfied at your treatment of him. He grows suspicious. He feels that you have been extortionate in your demands; in other words, "holding him up." It is very probable he would conclude that you had not only been doing it on this particular class of goods, but on everything else that he bought from you. This feeling may become so intrenched in them that his trade may be lost entirely.

Now, with minimum prices set, you and Jones would quote the same figure. The consumer then would have no ground to complain against you. He would feel that you were eminently fair and had treated him as his relations with you warranted.

The third and last classification—that of the effect that the establishment of minimum prices has on enhancing the demand.

I have observed in my experience with the dealers that they are more inclined to buy of a manufacturer who will consistently protect them in the sale of goods. I know this to be true of members of your organization. A dealer is naturally more desirous of selling a product on which he knows the chances are against interference from the manufacturer and dangers of competition from other dealers minimized. If he is assured that the manufacturer will not undersell him to the consumer and that his competitors will not be able to do so, he naturally prefers the product of that particular manufacturer. He wants his line because he feels that he can sell it to better advantage than one without any protection.

If there is anything that makes a dealer (to use a homely phrase) "madder than a wet hen" it is to have a manufacturer induce him to put in a stock of goods and then proceed to go out and undersell him to the consumer in his own territory, or permit another dealer to do so. This policy dampens the enthusiasm of the dealer. You probably have been "up against" a proposition of this kind and know just exactly how it feels. It is a species of business cupidity that deserves censure and rebuke. Established minimum prices prevent such conditions in affording protection, and for this reason I contend influence a demand by the dealer for the product of the manufacturer. Of course, I do not claim that the minimum prices stimulate the demand by the consumer; they do, probably, but indirectly; but I believe that they influence the dealer in his buying, and as the dealer buys to sell he is the more

inclined to push the sale of the product where the best and most satisfactory results are assured him.

William G. Simmons of Keith, Simmons & Co., Nashville, Tenn., was to have presented a paper on this subject viewing the matter from the position of the dealer. He was not able to be present, and sent the following communication showing his views, which was read:

"Our experience has been that it is distinctly to the benefit of the jobber that manufacturers establish not only minimum prices, but that they arrange through a rebate system a minimum selling price for the jobber which rebate he forfeits if he fails to maintain the established price.

There are, of course, some objections to this plan. One is that the adoption of a minimum price usually means the permanent establishment of a price for all trade, when otherwise the jobber would probably sell 60 per cent. of that particular line at higher prices. Our experience has led us to believe that it costs in the neighborhood of 15 per cent. to do business; 50 per cent. of our lines consists of staple goods, such as pipe, on which the margin will not average more than 5 to 10 per cent. Therefore the balance of our sales should bear a profit of from 30 to 40 per cent. to bring up the average to 20 per cent. It will be absolutely impossible therefore to present the matter to the manufacturers in such a way as to show them the necessity of reserving a margin of 25 to 30 per cent. on general supplies. Our conclusions, therefore, are that it is best that a minimum selling price be established on all staples or close selling lines; on other lines which are already selling on a fair margin of profit it is best that the price should not be restricted."

In the discussion which ensued A. D. Schofield of J. S. Schofield's Sons Company, Macon, Ga., indorsed the establishment of minimum prices, stating that a general adoption of the practice would result beneficially to both dealer and manufacturer. N. A. Gladding, vice-president of E. C. Atkins & Co., stated that the manufacturers would back up any move made by the dealers in the direction of the adoption of such a policy. R. B. Leiby of the Bailey-Leiby Company of Charleston, suggested the adoption of differential base discounts, and suggested the appointment of a committee to investigate the matter. M. W. Mix of the Dodge Mfg. Company, Mishawaka, Ind., dwelt in a happy vein upon the weakness of some dealers and the various subterfuges resorted to when they wished to evade any sort of agreement looking toward the maintenance of price. Ex-President Peter Blow emphasized the point that while any article purchased by a dealer certainly belonged to the dealer to dispose of as he chose, the demand for that article having been worked up by the manufacturer belongs to him, and consequently he should be permitted to protect that demand. This he cannot do so long as the dealers are permitted to cut the price of the article until there is no further incentive for them to carry it and so long as the dealer breaks down the demand created by the manufacturer.

E. C. Hinman, president of the American Steam Pump Company, Battle Creek, Mich., outlined the workings of his company in connection with this subject, which are similar to those of the Gardner Governor Company, as presented by Mr. Wall.

President Christopher stated that one great drawback which heretofore stood in the way of a local association taking a definite stand and adopting minimum selling prices was that dealers from other localities would come into the territory of the local association and cut these prices, thereby nullifying the efforts of the organization. This he stated would have to be remedied in the future by the co-operation of the National Supply and Machinery Dealers' Association, organized in Cleveland last February. He called upon J. H. Drury, the secretary-treasurer of this association, who in a few minutes of very pleasant talk assured the members that it was the desire of the national organization to co-operate on such matters which have as their object the general betterment of trade conditions.

Edward L. Stream of Gibbons & Stream, New Orleans, summed up the situation with a very strong plea for the indorsement by the association of minimum prices, con-

cluding with the presentation of a resolution which was unanimously adopted, and is as follows:

*Resolved*, In joint session of manufacturers and supply dealers it is the sense of the meeting that we favor the establishment by manufacturers of minimum selling prices whenever practicable; and that manufacturers who will adopt the system notify the association and submit their plan.

Thursday afternoon was devoted to executive sessions of both the manufacturers' and dealers' associations.

#### The Manufacturers' Session.

In the meeting of the manufacturers printed copies of the constitution and by-laws of the association were distributed. The constitution contain the following interesting articles:

#### Constitution of Manufacturers' Association.

*Membership.*—Any person, firm or corporation engaged in the manufacture of goods handled by the supply and machinery dealers' trade may, upon the recommendation of the Membership Committee and of the indorsement of the Executive Committee of this association, become a member hereof upon subscribing to the constitution and by-laws and the payment of an annual membership fee of \$25. Manufacturers' brokers, syndicate buyers, &c., are not eligible to membership in this association.

*Duty of Advisory Board.*—The Advisory Board shall elect a chairman, vice-chairman and secretary at its first meeting, and shall meet upon the call of the president or the chairman of the board, or on the call of the executive head of any Supply and Machinery Dealers' Association, at such place as may be agreed upon between the respective chairmen of the conferring boards the expense attendant upon such meetings, except the annual meeting, is to be borne by the association. A majority of the Advisory Board shall constitute a quorum for the transaction of any business which may regularly come before it. It shall be its duty to co-operate with a like committee from any Supply and Machinery Dealers' Association, forming a Joint Advisory Board, to receive grievances and adjust differences between members thereof. At the first session of the Joint Advisory Board a chairman, vice-chairman and secretary shall be elected from the total members thereof, who shall officiate in that capacity during the term of office for which they were respectively elected by their principal associations. In the event of a disagreement in the Joint Advisory Board, a full report thereof shall be promptly submitted to the Executive committees of each association for instructions. Any member objecting to the action of the Advisory Board in matters relating to his personal membership shall have the right of appeal to the Executive Committee, whose decision shall be final as to that member excepting that upon a petition from ten members the matter or matters so involved may be taken up at the next annual meeting, or at a special meeting called for that purpose, for consideration in executive session, subject to the final action of the majority of the members present and voting.

Any member of the Advisory Board who may be a competitive manufacturer of any member of the association concerned in any trade adjustment or grievance before said board, shall be ineligible to act thereon, and it shall be the duty of the president to appoint another member from the Executive Committee to act as a substitute on said matter.

*Forfeiture of Membership.*—Any member against whom an adverse decision has been made by the Joint Advisory Board and approved by the respective Executive Committees, may upon their recommendation be declared ineligible for further membership. The offending member shall be so notified by mail by the secretary, and his resignation requested; if after ten days the member has not resigned his membership, it shall be declared forfeited by the president and reported to the executive committees of both associations.

#### Officers of Manufacturers' Association.

The following officers of the Manufacturers' Association were elected:

President, E. C. Hinman, Battle Creek, Mich.; first vice-president, M. W. Mix, Mishawaka, Ind.; second vice-president, Chas. F. Aaron, New York City; third vice-

president, John J. Voorhees, Jersey City, N. J.; Executive Committee—S. L. Moyer, N. A. Gladding, Chas. P. King, Jos. H. Grubb, S. H. Browning.

The following appointments were made by the Executive Committee:

*Advisory Board*—Samuel L. Mozer, N. A. Gladding and M. W. Mix.

*Membership Committee*—Joseph W. Wall, W. C. Olds, Wm. H. Gough, Chas. E. McFarlan and Clement Restein.

*Entertainment Committee*—T. H. Dickinson, Chas. F. Aaron, Chas. P. King, T. P. Browning and C. W. Martin, Jr.

#### The Dealers' Session.

A paper by Bayles Lee of Lee Bros., Memphis, Tenn., on "Methods of Filing Catalogues in the Office," was read, containing the following summary:

I beg to submit the following recommendation—one that I found from actual use to be the most convenient and accessible at all times:

Arrange catalogues according to size, which will give about four classes of size; allot to each size or class numbers to twice the quantity of catalogues; for instance, you have 50 catalogues of a size, allot 100 numbers, thereby giving ample room for growth or additional accumulation of this size. Your numbers will then start at 1 and run to 50; your next size will start at 100 and run forward to the quantity of catalogues. This class will have 125 or 150, therefore you will allot numbers up to 300. You will only have about three classes in which you can arrange for the catalogues to stand, and the numbers can be very easily read by near observation. The smaller catalogues or pamphlets will then be placed in binders similar to the one which I exhibit with this paper. These binders will then bear numbers the same as the catalogues; in other words, you allot to one size of your catalogues 1 to 100, another size 200 to 300, another size 300 to 400 or 500, and to your binders 500 to 600. You of course use sufficient numbers to fully accommodate the quantity of your different size catalogues. Then get a wide, full size index with as much room as possible contained in it. List these catalogues alphabetically and allow the number of the catalogue to follow the name. In your binders where in some cases you have three or four or a dozen pamphlets or small catalogues, you will list them just the same as your catalogues and show the binder number. By a little contact you soon learn, after referring to your index, that catalogue No. 50 is found in a certain class, catalogue No. 200 in another class, which class is represented by the size or dimension of the catalogue.

In my office I use two large cabinets with adjustable shelves and sliding doors. It is only one second's work to obtain the very book you desire. These binders are inexpensive and you cannot appreciate how valuable they are in taking care of small catalogues or pamphlets that are so easily misplaced or easy to get out of place. As it is not always convenient to remember the name of the manufacturer of some particular catalogue, and sometimes for the purpose of comparison you want to use the catalogues of several manufacturers, we arrange an index, which we call an index of articles. We go through these catalogues very carefully and index each article manufactured, stating after the article the name of the maker and the catalogue or binder number. For instance, under "H" we have Headlights; opposite this we have the Handlan & Buck Mfg. Company; following this will be No. 26, the catalogue number. In many instances you will have a double index, as there are some particular lines you would like to designate by class. For instance, track tools; you follow this with Atha Tool Company, No. 40, whereas you know that track tools comprise track gauges, lining bars, claw bars, mauls, &c., and at the same time for absolute certainty we give each one of these a double index by registering both under "T's" for track gauges and under "G's" for gauges—track, under which is also listed "Gauges, steam; the same way with bars; claw bars will come under "C," lining bars under "L," but under bars you have both Claw and Lining bars. All this may appear superfluous, but for handy reference and to prevent overlooking our hand at any time, either with new assistants or old ones that have grown negligent in our service, we surround ourselves with every protection by the little additional work which requires to be done but once.

The discount sheets, in my opinion, should be kept entirely to themselves. For this purpose we have a portfolio alphabetically arranged, in which they are placed alphabetically, and as we receive new discount sheets we remove the old ones. These discount sheets are checked occasionally and when we feel they are required we make application for revised sheets.

The system that I have outlined carries with it no fixed expense. It is always complete, provided the catalogue is replaced in its class when finished with; if it is not but is put into some of the other classes it would be very notice-



able, as the book would either be larger or smaller than the books that surround it.

A paper which commanded intense interest was presented by Forbes Liddell of the Liddell Machinery & Supply Company, Montgomery, Ala., on the subject of "Our Salesmen," Mr. Forbes said:

The question which you have asked me to answer is so complex that I will treat it as three questions. First, What is the best method of keeping record as to the results actually accomplished by our salesmen? Second, What daily information should they submit to the house? Third, what is the best method of compensating salesmen, fixed salary, commission or salary and commission?

The first question is "dead easy." All that is necessary is to figure the profit on each article sold and from the sum total of these profits deduct the cost of salary and expenses, and there you are. Or if the expenses and salary exceed the profits it is mighty easy to deduct the latter from the former and you know to a nicety just what you have lost. Then the next thing in order is to fire the traveling man. Was anything ever so simple?

We have on our books an account headed "Jones' Traveling Expenses and Salary." Another is headed "Smith's Traveling Expenses and Salary." We know exactly what these accounts cost us, and at one time we carefully computed the profits on each and every sale to satisfy ourselves that we were making money. Afterward, to save time, we figured that our average profit was a certain percentage of our total annual business, and if Jones happened to have sold \$50,000 worth of goods we credited the account with this proportion of the profits. Let us suppose that you are employing Jones and that he sells \$50,000 worth of goods and that your average profit is 15 per cent. He, then, has made for you \$7,500, minus the amount of his salary and expenses. But this proportion is not always fair. He may possess certain technical knowledge, or he may be the victim of valuable, dearly bought experience which makes him the one man that can land a certain abnormally profitable order, which, standing out as conspicuous as your own name in a newspaper report of a police scandal, entitles him to a credit for the entire amount of the profit, thus increasing the amount which would be shown by the ordinary percentage.

All this is easy, but just as you have persuaded yourself that you know to a goat's heel how much you are making on Jones it occurs to you that a considerable number of the orders which he sends in would come to you without his assistance and you are again at sea, and therefore just what proportion of your profits is due to his efforts can be ascertained only by laying him off for a year. If you want to demonstrate a theory you can make the experiment. You may fully realize and appreciate the indirect benefit which you derive by having him on the road, but unless his account shows an actual profit you cannot afford to keep him. You have to stand the indirect losses and bear the indirect expenses, and, therefore, you are entitled to the indirect profits.

But before dismissing Jones you must not forget that orders frequently come in from men he has seen and with whom he has talked long after he has left them, and that these parties sometimes become your best customers. Without Jones you might never have heard of them. His work is not confined to selling goods; he finds people whose trade has gradually slipped away from you, who have been nursing a grievance. He lends a sympathetic ear to their complaints and helps to find out who and what is to blame. Frequently he brings back a customer who has been led away by the wicked talk of a bad competitor, and occasionally he finds a mote in the eye of your own house. You may have a careless, indifferent clerk who thinks of nothing but pay day, who has taken so little interest in customers visiting your place that they have cut you out, and have been caught in the web of that wary spider, your competitor. This is a wicked spider, while you are good, but the foolish customer does not know it until Jones reads him a page from the book of truth.

Mr. President, do you believe in advertising? Do you believe that in paying a newspaper \$25 to \$50 a month for printing your name and proclaiming the nature of your business you are throwing away your money? Possibly you do, but a great majority of your friends and contemporaries look upon such an investment as profitable. What does your traveling man do? Can it be denied that he talks your house and your goods wherever he goes? And is it not a fact that he strives to convince every one that you are not dead, that you are alive and in business, and that your wares are good and your prices right? And if, perchance, your prices are not right and your wares are not the most desirable, can he not ascertain these facts easier and quicker than any one else, and help you to get in proper shape? You may have been selling a certain brand of belting—I will use belting in this illustration because no one makes bad belting, and therefore no one can take offense—and you have bragged on this belting so much that you have thoroughly convinced yourself that it is absolutely the best. You don't understand why you don't have the en-

tire belting trade in your territory. You actually feel sorry for your poor, deluded competitor, who is boasting something else, and you marvel at the gross ignorance of the consumer who frequently pays more for an article so vastly inferior that it should not be mentioned in the same week.

But Jones knows something, too, and having your interest at heart, takes steps to convert you. He makes a special belt trip. He may glide into the confidence of the purchaser in a smooth, diplomatic way, or he may bump into the proposition, hitting all the corners and knocking off the paint like a ferry boat entering a slip, but he gets at the bottom and works up through the whole situation and returns to your office a wiser Jones. And this is what he says:

"Our 'Nonesuch' belt has been ordered only when breakdowns have occurred. The people are using it only on machines that don't have much work. Other belts are running alongside of ours, doing heavier work and lasting longer. The people have written us about this several times, but we have invariably thought they were lying and have paid no attention to their complaints. Several are using a brand called 'Everlasting,' which is made up in Squinataqua, that is not sold by any dealer in this territory. We can get the agency for it. It is doing better work than ours or any of the others. The people buy it direct whenever they have time to wait, but they want us to carry it in stock."

The outcome is that you reluctantly discard "Nonesuch" and put in "Everlasting," and your belting trade is quadrupled. You might have gone on swearing by "Nonesuch" until you had been jailed for malicious lying if it hadn't been for Jones.

Yet this is why you have him. This is preliminary selling. You expected this when you hired him, and therefore, with a full realization of the manifold blessings of Jones, the question reverts to the original proposition: What amount of profit are you making on him? and to answer this you must either employ a clerk to figure the actual profit on each and every sale or estimate it from the total amount shown by your annual inventory.

The second question is: "What daily information should they (the traveling men) submit to the house?"

The territory covered by the men traveling for Southern supply dealers is not to be compared with the vast extent of territory traveled by the representatives of manufacturers. It rarely happens that a letter from one of our men does not reach us at latest the day after it is mailed. Hence we should require daily reports. We should know every day where each one of our travelers is located and where he expects to be the day following. He should write every day whether he sells anything or not. We frequently get an inquiry that requires immediate, personal attention, and, by knowing just where we can reach our best man with a telegram, we order him to see this inquirer at once. Instances of this kind are frequent in the machinery department of our business, and the result has often been that a man has started out on a particular route—all mapped out in advance—and has wound up on something entirely different.

The traveling man should always stop at the same hotel. He should put up with slight annoyances and inconveniences a long time before making a change. He should become identified with one hotel. His customers as well as his house should always know where to find him. And he should never leave a town without inquiring for mail and telegrams at the post office and telegraph office. He must not take it for granted that all these important documents are delivered to his hotel. His orders should be written in regular style and all should be mailed. He must not bring orders into the house and deliver them in person. He should mail his orders, even though he is coming home on the same train. It is necessary for orders to be received and entered in regular form. I have known men to keep them in their grips or in the pocket of their "other" coat for 24 hours after they returned to the house. He should report, in person, to the manager at the earliest convenient time and he should talk without reserve. Everything he has learned or heard while on the road which in any way affects the house should be freely discussed. The manager should have full knowledge of the traveler's impressions and opinions in order that he may know his customers and also know whether or not he is being properly represented by the man on the road.

Now I will take up the last section of this complex question: "What is the best method of compensating salesmen, fixed salary, commission, or fixed salary and commission?" Mr. President, if I were the court of last appeal I would answer this question by saying, "Fixed salary," and would rest my case without argument. But possibly I may be wrong. Confidentially, Mr. President, I remember that sometimes my opinions have been diametrically opposed to what was afterward conclusively proved to be right, and therefore I think it best to give my reasons for believing that a fixed salary for a traveling salesman is better than either of the other methods. I have experimented with all of these plans, and from knowledge gained by bought-and-paid-for experience I emphatically say pay the traveling man a fixed salary. The man on commission never makes

as much as he wants out of one line, or one house, and he usually arranges to handle "side lines," and he generally devotes his time and energy to that which pays him most. Your goods and your house will often receive little attention. To offset this you may increase his commissions, and the result will be that most of your profits will go to Jones. For Jones will represent you in no other capacity than as a sales agent. He gets no pay unless he sells goods. His interest in you and your house will cease at that line. He may not intend this, but as the system encourages nothing but self-interest this result will be inevitable. Whenever he returns from a trip a large portion of your time and your bookkeeper's time is taken up in figuring out his profits. He becomes your competitor. He hurries off to close deals the foundations of which have been laid in your office. You discover yourself withholding information from him, while he, in turn, withholds information from you. You lose business which you would get if you and Jones were working in harmony. He has no interest in the work of your other salesmen and no interest in you, and he is frequently tempted to give a tip to a rival house for a consideration.

This is true to some extent if you pay him a combination of salary and a commission on certain articles, or on everything over a fixed amount. You have given him an incentive, you think, to increase his sales, but you have also tempted him to be dishonest. For he will sell your goods to a man that he would turn down if he was not interested in the profit. This man may be temporarily good. He may pay his first bill promptly, and possibly the second, but he eventually fails, owing large amounts to every one, and, in all likelihood, the largest to you. Jones knew there were some slight undercurrents of suspicion, and some shrugs of shoulders, among this man's home people concerning his real condition, but he hoped the calamity would be averted, that he would eventually pull through, and without intending to swindle you he took chances because you had tempted him with this baneful commission. Your man on the road, who should be your representative in the full meaning of that term, who should consider your business his business, whose sole consideration should be the interest and protection of his house, who should carefully investigate the local and general standing of every customer, who should inform you of the slightest rumor affecting every man who is buying, or wants to buy, your goods, who should realize that the first consideration is the ability and disposition of the customer to pay his bills, who should aid you in fixing a limit of credit for every account on your books, without really intending wrong has committed a moral crime.

Mr. President, you may make as many combinations and agreements on prices as you wish, but Jones will knock them out. Prices cannot be held in line until you put him on a straight salary basis. If you pay him 5 per cent. he will give four-fifths of it to a customer before he will lose a sale. He can do this in various secret ways, but sooner or later it will be discovered and your combination will go to pieces. Just as long as manufacturers and dealers put commissioned men on the road prices cannot be maintained.

Again, Jones will make long and expensive trips—expensive trips—expensive to you, not to him—to points where there are remote possibilities of making sales, hoping to increase his commissions. These sales may sometimes materialize, but their cost exceeds the profits. Your year's business may possibly show an increase in volume, but not in proportion to increased losses and expenses.

Call a halt. The system is wrong. It has created jealousies in your working force. Your men are pulling against each other and against you. Every man is for himself. There is no "team work," no pride in the success of the house and few regrets if it fails. Save yourself. Save Jones before it is too late. Cut out these seductive commissions. Get all your men into your business family and into your confidence. Listen to their suggestions and mix their best ideas with your own, and if you want to reward them do so at the end of each successful year in the shape of a percentage on their salaries and not on their sales, and your own reward will be increased business, satisfied customers, satisfied employees, a clear conscience, and, finally, a seat in that most favored section of heaven where none but supply men can enter.

The Executive Committee of the Dealers' Association made the following appointments:

*Advisory Board.*—Peter E. Blow, Edward L. Stream, John G. Christopher.

*Grievance Committee.*—George V. Denny, Thomas W. Fritts, J. English.

*Transportation Committee.*—Thos. G. Hyman, Thomas Fordyce, E. A. Peden.

#### Entertainment.

On Thursday night a dance was tendered the visitors to the city by the management of the De Soto Hotel, which proved to be a very delightful and well attended affair. A dinner and vaudeville performance were given at the Casino Friday afternoon and evening, the talent

for the latter being furnished by Jenkins Bros. of New York. The performers included: Henry Frantzen, pianist; Wm. Murray, baritone singer; Wm. Redmond, tenor soloist; Chas. Sheck, magician.

The following were registered at the headquarters of the two associations:

#### Manufacturers.

N. A. Gladding, E. C. Atkins & Co., Indianapolis, Ind.  
 E. C. Hinman, American Steam Pump Co., Battle Creek, Mich.  
 Henry Ihnen, Ajax Mfg. Co., Pittsburgh, Pa.  
 Chas. E. Billin, American Engineering Co., Chicago, Ill.  
 L. C. Frazier, American Belting Co., Youngstown, Ohio.  
 H. A. Schaub, Ashland Paint Co., Ashland, Ky.  
 E. S. Morrierief, American Steam Packing Co., Boston, Mass.  
 G. B. Gosman, Ashcroft Mfg. Co., New York.  
 J. V. Abbott, J. V. Abbott Mfg. Co., East Dedham, Mass.  
 Chas. P. King, American Iron & Steel Mfg. Co., Lebanon, Pa.  
 Chas. Bond, Chas. Bond, Philadelphia, Pa.  
 T. R. Barnes, Barnes Mfg. Co., Mansfield, Ohio.  
 J. O. Brown, Brown-Cochran Co., Lorain, Ohio.  
 H. Schurman, Barry Saw Co., Indianapolis, Ind.  
 Jos. H. Grubb, M. L. Bayard & Co., Woodbine, N. J.  
 Randolph Brandt, Randolph Brandt, New York.  
 T. E. Mooney, Bradford Belting Co., Cincinnati, Ohio.  
 Robt. Bishop, Robt. Bishop Mfg. Co., Boston, Mass.  
 W. A. Thompson, Brockton Brush & Scraper Co., Brockton, Mass.  
 J. C. Pierson, Brook Wrench Mfg. Co., Garwood, N. J.  
 H. C. Barron, Buffalo Forge Co., Buffalo, N. Y.  
 E. H. Garvin, Combination Rubber Mfg. Co., Bloomfield, N. J.  
 Robt. B. Wood, Crescent Belting & Packing Co., Trenton, N. J.  
 G. E. Tanberg, Adam Cook's Sons, New York.  
 E. Harrold, Crescent Machine Company, Leetonia, Ohio.  
 S. W. Tyler, Criss-Cross Tube Cleaner Co., Clinton, Mass.  
 F. M. King, Sr., Challenge Machine Co., Inc., Philadelphia, Pa.  
 C. E. Swain, Chandler & Taylor, Indianapolis, Ind.  
 L. D. Jones, Cliff & Guilbert, New York.  
 F. B. Furniss, Canedy-Otto Mfg. Co., Chicago Heights, Ill.  
 W. C. Sargent, Chain Belt Co., Milwaukee, Wis.  
 W. L. Keith, Cleveland Block Co., Cleveland, Ohio.  
 I. R. Bailey, Diamond Rubber Co., Akron, Ohio.  
 C. H. Stolley, Deverall Perfection Co., Brooklyn, N. Y.  
 E. A. Ludden, Detroit Oak Belting Co., Detroit, Mich.  
 M. W. Mix, Dodge Mfg. Co., Mishawaka, Ind.  
 Hy. Dreses, Dreses Machine Tool Co., Cincinnati, Ohio.  
 A. A. DeLoach, DeLoach Mill Mfg. Co., Atlanta, Ga.  
 Jno. D. Hibbard, John Davis & Co., Chicago, Ill.  
 Joseph Campbell, Diamond Saw & Stamping Works, Buffalo, N. Y.  
 T. E. Flanagan, Detroit Lubricator Co., Detroit, Mich.  
 W. A. Payne, Eureka Tackle Block Co., Cincinnati, Ohio.  
 Geo. Wies, Eureka Fire Hose Co., New York.  
 Geo. L. Estes, Estes Mfg. Co., Rochester, N. Y.  
 Geo. L. Estes, Forster Pulley Works, Cuba, N. Y.  
 Dan. Arbuckle, Gandy Belting Co., Baltimore, Md.  
 Jos. W. Wall, Gardner Governor Co., Quincy, Ill.  
 Geo. V. Denny, G. T. Glasscock & Sons, Greensboro, N. C.  
 H. W. Hubbard, Hubbard & Co., Washington, D. C.  
 Guy B. Gosman, Hancock Inspirator Co., New York.  
 G. B. Gosman, Hayden & Derby Mfg. Co., New York.  
 F. M. Baldwin, Indiana Shovel Co., New Castle, Ind.  
 A. C. Langston, Jenkins Bros., New York.  
 A. B. Keasey, Keasey Pulley Co., Toledo, Ohio.  
 T. I. Stephenson, Knoxville Iron Co., Knoxville, Tenn.  
 H. A. Dexter, Lidgerwood Mfg. Co., New York.  
 D. M. Montgomery, LaBelle Iron Works, Steubenville, Ohio.  
 D. H. Lucas, C. O. Lucas & Co., Greenville, Ohio.  
 Wm. O. Lee, Lee Mfg. Company, Port Huron, Ohio.  
 F. D. Halm, Mark Mfg. Co., Chicago, Ill.  
 S. H. Corbett, Morley Brothers, Saginaw, Mich.  
 W. H. Shelton, McConnell Belt & Leather Co., Inc., Athens, Ga.  
 E. E. Hunter, Medart Patent Pulley Co., St. Louis, Mo.  
 Chas. A. Doble, McRae & Roberts Co., Detroit, Mich.  
 P. V. Lawson, Menasha Wood Split Pulley Co., Menasha, Wis.  
 Wm. H. Gough, Mount Vernon Belting Co., Baltimore, Md.  
 Chas. R. Wilcox, National Supply Co., Baltimore, Md.  
 C. F. Aaron, New York Leather Belting Co., New York.  
 H. A. Newbury, Newbury Mfg. Co., Monroe, N. Y.  
 H. R. Willl, National Foundry Mfg. & Supply Co., Williamsport, Pa.  
 G. E. Davis, Novelty Iron Works, Dubuque, Iowa.  
 Geo. B. Dickerson, New Jersey Car Spring & Rubber Co., Jersey City, N. J.  
 T. P. Browning, Ohio Valley Pulley Works, Maysville, Ky.  
 H. M. Reynolds, Oneida National Chuck Co., Oneida, N. Y.  
 L. W. Seymour, James Ohlen & Sons Saw Mfg. Co., Columbus, Ohio.  
 L. H. Olmstead, L. H. Olmstead, Hasbrouck Heights, N. J.  
 F. J. McNeur, W. F. Potts Sons & Co., Inc., Philadelphia, Pa.  
 Chas. E. McFarlan, Wm. Powell Co., Cincinnati, Ohio.  
 C. D. McCurdy, Paul Mfg. Co., Fort Wayne, Ind.  
 W. A. Chenoweth, Fayette R. Plumb, Inc., Philadelphia, Pa.  
 R. D. Holdrege, Peerless Rubber Mfg. Co., New York.  
 H. H. Hellerman, Penn Engineering Co., Philadelphia, Pa.  
 B. H. Sanders, Pleuger & Henger Mfg. Co., St. Louis, Mo.  
 W. Parker, Pennsylvania Shafting Co., Spring City, Pa.  
 Robt. Hesterberg, Queen City Brass & Iron Works, Cincinnati, Ohio.  
 E. W. Hough, Reeves Pulley Co., Columbus, Ind.  
 W. F. Rannels, Albert Russell & Sons Co., Newburyport, Mass.  
 R. B. M. Cook, Russell-Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.



Chas. Wilcox, J. Registers' Sons, Baltimore, Md.  
 A. W. Griffith, Red Jacket Mfg. Co., Davenport, Iowa.  
 F. Robertson, Jas. L. Robertson & Sons, New York.  
 Clement Restein, Clement Restein & Co., Philadelphia, Pa.  
 M. C. Elchel, Roe-Stephens Mfg. Co., Detroit, Mich.  
 A. R. Webber, H. B. Sherman Mfg. Co., Battle Creek, Mich.  
 Mr. Black, A. Sanford Logging Tool Co., Oshkosh, Wis.  
 W. R. Patten, Saginaw Mfg. Co., Saginaw, Mich.  
 Jas. T. Mackay, St. Louis Machine Tool Co., St. Louis, Mo.  
 H. J. Benson, S. R. Slaymaker, Lancaster, Pa.  
 W. W. Birge, St. Louis Shovel Co., St. Louis, Mo.  
 F. N. Hamerstrom, Trenton Rubber Mfg. Co., Trenton, N. J.  
 F. W. Terpening, Trinidad Asphalt Mfg. Co., St. Louis, Mo.  
 V. A. Moore, Upson Nut Co., Cleveland, Ohio.  
 W. J. Tucker, United States Heater Co., Detroit, Mich.  
 M. L. Bailey, Union Mfg. Co., New Britain, Conn.  
 J. J. Voorhees, Voorhees Rubber Mfg. Co., Jersey City, N. J.  
 A. D. Rogers, Whitman & Barnes Mfg. Co., Chicago, Ill.  
 W. S. Raymond, Warren Co., Chicago, Ill.  
 S. H. Goodwin, Westcott-Church Co., Oneida, N. Y.  
 W. H. Fisher, T. B. Woods & Son, Chambersburg, Pa.  
 H. G. Wolf, Wolf Co., Chambersburg, Pa.  
 F. J. Ford, The Yale & Towne Mfg. Co., New York.  
 W. W. Sanderson, Carborundum Co., Niagara Falls, N. Y.  
 V. H. Bramble, Union Steam Pump Co., Battle Creek, Mich.  
 Samuel L. Moyer, Lunkenheimer Co., Cincinnati, Ohio.  
 J. H. Dickenson, New York Belting & Packing Co., New York.  
 G. H. Andrews, Penberthy Injector Co., Detroit, Mich.  
 Frank Harrison, Jones & Laughlin, Pittsburgh.  
 F. R. Harty, Rumsey & Co., Seneca Falls, N. Y.  
 H. T. Evans, Crandall Packing Co., Palmyra, N. Y.  
 Franklin Williams, New York.  
 Frank L. Patterson, Frank L. Patterson & Co., New York.  
 W. H. Meyerhöfer, The Deming Co., Salem, Ohio.  
 H. J. McCue, American Steel & Wire Co., Chicago.  
 J. E. Osgood, J. M. Carpenter Tap & Die Co., Pawtucket, R. I.  
 E. Bertram Pike, Pike Mfg. Co., Pike, N. H.  
 A. D. Hermance, Hermance Mfg. Co., Williamsport, N. Y.  
 J. L. Roe, General Electric Co., Schenectady, N. Y.  
 W. C. Olds, Ames Iron Works, Oswego, N. Y.  
 J. W. Longwell, Carnegie Steel Co., Pittsburgh, Pa.  
 G. N. Carter, I. B. Williams & Sons, Dover, N. H.  
 William L. Paden, Northampton Emery Wheel Co., Leeds, Mass.  
 J. M. Wood, American Pulley Co., Philadelphia, Pa.  
 L. D. May, Leschen Rope Co., St. Louis, Mo.  
 H. Parker, American Steam Gauge & Valve Co., Boston, Mass.  
 L. N. Lukens, Longmead Iron Co., Philadelphia, Pa.  
 H. A. McCord, Western Steel Car & Foundry Co., Anniston, Ala.  
 J. L. Beaubien, R. Hoe & Co., New York; Chicago Belting Co., Chicago, Ill.  
 J. H. Mather, I. & J. White Co., Syracuse.  
 C. A. Bower, Clayton & Lambert Mfg. Co., Detroit, Mich.  
 F. B. Greenleaf, American Injector Co., Detroit, Mich.  
 Louis Le Conte, Charleston Metallic Packing Co., Charleston, S. C.  
 C. B. Jenkins, Charleston Metallic Packing Co., Charleston, S. C.  
 George A. Rogers, H. A. Rogers Co., New York.  
 E. F. Cooper, Henry Disston & Sons, Inc., Philadelphia, Pa.  
 Frank X. Ohlen, E. C. Atkins & Co., Atlanta, Ga.  
 A. R. Weber, H. B. Sherman Mfg. Co., Detroit, Mich.  
 J. H. Steedman, Curtis & Co., Mfg. Co., St. Louis, Mo.  
 Geo. W. Bowly, New Jersey Car Spring & Rubber Co., Jersey City, N. J.  
 D. D. Campbell, Dodge Mfg. Co., Mishawaka, Ind.  
 G. C. Dunn, Voorhees Mfg. Co., Jersey City, N. J.  
 T. E. Flanagan, Detroit Lubricator Co., Detroit, Mich.  
 Willard S. Parker, Northampton Emery Wheel Co., Chicago, Ill.  
 Frank E. Olin, Western Tube Co., Kewanee, Ill.  
 Leopold Werstein, American Steam Pump Co., Battle Creek, Mich.  
 Jas. E. Anderson, Lunkenheimer Co., New Orleans, La.  
 Thomas A. Parnell, Crucible Steel Co., Chattanooga, Tenn.  
 H. W. Seymour, The Crane Co., Baltimore, Md.  
 W. H. Kettig, Crane Co., Birmingham, Ala.  
 John A. Beynon, Dodge Mfg. Co., Mishawaka, Ind.  
 R. T. Williams, Dodge Mfg. Co., Mishawaka, Ind.  
 Joseph H. Grubb, Hussey-Blinn Shovel Co., Philadelphia, Pa.  
 G. F. Bradhurst, Page Belting Co., Concord, N. H.  
 W. M. Hood, Lunkenheimer Co., Cincinnati, Ohio.  
 W. P. F. Ayer, Walworth Mfg. Co., Boston, Mass.  
 Chas. W. Martin, Jr., Jenkins Bros., New York.  
 D. D. Peden, Jr., Peden Iron & Steel Co., Houston, Texas.  
 Samuel Hall, Chas. Bond, Philadelphia, Pa.  
 Joseph Campbell, Diamond Saw & Stamping Works, Buffalo, N. Y.  
 H. C. Miller, Diamond Rubber Co., Akron, Ohio.  
 George D. Wilcox, Foster Pulley Works, Cuba, N. Y.  
 Robert D. Allen, Wm. Powell Co., New Orleans, La.  
 F. R. Harty, Rumsey & Co., Seneca Falls, N. Y.  
 V. H. Branble, Union Steam Pump Co., Battle Creek, Mich.  
 S. G. Van Dyke, Mechanical Rubber Co., Cleveland, Ohio.  
 Jos. L. Gillmon, Mechanical Rubber Co., Chicago, Ill.  
 Allen E. Whitman, Patterson, Gottfried & Hunter, New York.  
 J. M. Van Harlingen, Carnegie Steel Co., Atlanta, Ga.  
 J. R. Whitmore, Cotton States Belting & Supply Co., Atlanta, Ga.  
 Clement Restein, Clement Restein & Co., Philadelphia, Pa.  
 W. B. McGee, Southern Engine & Boiler Works, Jackson, Tenn.  
 H. H. Whiting, Canton Pump Co., Canton, Ohio.  
 J. H. Drury, secretary-treasurer National Machinery and Supply Dealers' Association, Providence, R. I.  
 J. G. Belting, Lombard Iron Works & Supply Co., Augusta, Ga.  
 D. B. Presser, American Iron & Steel Mfg. Co., Atlanta, Ga.  
 Geo. E. Walton, Eaton, Cole & Burnham Co., New York.  
 E. R. Richards, Richards Machine Co., Atlanta, Ga.  
 F. C. McNeive, W. F. Potts' Sons & Co., Inc., Philadelphia, Pa.

## Dealers.

Geo. A. Smith, Smith-Courtney Co., Richmond, Va.  
 Peter E. Blow, Southern Brass & Iron Co., Knoxville, Tenn.  
 Jno. G. Christopher, Jno. G. Christopher, Jacksonville, Fla.  
 T. J. Halsey, Fairbanks Co., Baltimore, Md.  
 Geo. J. Jones, Crane-Hawley Co., Indianapolis, Ind.  
 H. P. Stratton, Stratton Bragg Co., Petersburg, Va.  
 Geo. R. Lombard, Lombard Iron Works & Supply Co., Augusta, Ga.  
 Geo. V. Denny, Georgia Supply Co., Savannah, Ga.  
 J. H. Haslam, Georgia Supply Co., Savannah, Ga.  
 Ed. L. Stream, Gibbens & Stream, New Orleans, La.  
 J. C. Miller, Miller Supply Co., Huntington, Va.  
 G. A. Rogers, H. A. Rogers Co., New York.  
 V. L. Starr, Revere Rubber Co., Marietta, Ga.  
 John C. Doyle, Nashville, Tenn.  
 E. C. Brooks, Keley & Jones Co., Virginia.  
 S. Milnor Price, S. M. Price Machinery Co., Norfolk, Va.  
 H. Ellis, Jr., Smith-Courtney Co., Richmond, Va.  
 Forbes Liddell, Liddell Machinery & Supply Co., Montgomery, Ala.  
 R. B. Leiby, Bailey-Leiby Co., Charleston, S. C.  
 C. B. Jenkins, Cameron & Barkley Co., Charleston, S. C.  
 M. B. Barkley, Cameron & Barkley Co., Charleston, S. C.  
 Louis Le Conte, Cameron & Barkley Co., Charleston, S. C.  
 W. R. Pierce, Revere Rubber Co., Philadelphia, Pa.  
 W. G. Wilmot, Wilmot Machinery Co., New Orleans, La.  
 A. D. Schofield, J. S. Schofield's Sons Co., Macon, Ga.  
 Mallory Beddingfield, J. S. Schofield's Sons Co., Macon, Ga.  
 James McGraw, Jr., James McGraw, Richmond, Va.  
 Thos. G. Hyman, Hyman Supply Co., Newbern, N. C.  
 James T. McGraw, Southern Railway Supply Co., Richmond, Va.  
 J. H. McKinnon, Ploof-McKinnon Co., Jacksonville, Fla.  
 B. C. King, Keith, Simmons & Co., Nashville, Tenn.  
 Jno. W. Stiles, Keasbey-Mattison Co., Atlanta, Ga.  
 Jos. C. Fulford, J. S. Schofield's Sons Co., Macon, Ga.  
 A. M. Gibbs, Gibbs Machinery Co., Columbia, S. C.  
 H. E. Ploof, Ploof-McKinnon Co., Jacksonville, Fla.  
 W. S. Lannstein, Whitney Supply Co., New Orleans, La.  
 W. D. Krenson, J. D. Weed & Co., Savannah, Ga.

## Central American Notes.

SAN JOSÉ, C. A., April 17, 1905.—While a considerable portion of the French machinery on the Isthmus of Panama may be used on the canal work, there is no doubt that much of it is utterly useless, and that millions will have to be spent in American dredges, cars, locomotives, rails and general machinery before the year is out. This is more certain than ever since it is well known that the road bed and general equipment of the Panama Railroad is to be thoroughly overhauled and replaced with modern cars, &c.

The long standing dispute between Peru and Chile looks serious again, and both countries are beginning to buy arms and ammunition in quantities. Insistent reports make Guatemala the scene of another revolution, assisted by malcontents from Mexico and Salvador. For several weeks steamers and vessels in general along the coast have been watched closely for imported arms and munitions of war. Business firms also find it difficult to conduct trade with Guatemala because the currency has depreciated to a ridiculous extent, paper money worth five or six cents on the dollar being the only thing in sight. If the Chile-Peru misunderstanding blows over the American syndicate developing the Pasco mines will open up some of the most valuable leads on the coast, but to do this thoroughly it will have to nearly double its present equipment. It is understood that it has large capital to back the enterprise.

The owners of the Yucatan mines in Honduras, not far from the Nicaraguan frontier, are trying to get a concession for a line of railroad from Yucatan to tap the main line of the Inter-oceanic Railroad of Honduras. It is proposed by the Honduran Government that the fine road building from Sabana Grande to San Lorenzo shall be used for the road bed of the Honduras Inter-oceanic Railroad.

The British bondholders are pressing Costa Rica somewhat, due to nonpayment of interest on the foreign debt by this Republic. There are those who believe that a Santo Domingo complication could be developed out of the present situation in Costa Rica and Nicaragua, as well as Guatemala. From time to time Americans have been imprisoned in these countries for telling the truth about the situation, and hopes have been expressed that our Government will interfere. Another steamer line or two from the United States to these countries would do more to make them progress in every way than 20 years of theorizing. The people here, if given a fair chance, would grasp progressive ideas with a will.

Many of the American investors in Onjaca and Chiapas are doing well, but those who went into the low, swampy country are fast leaving that section.

# THE IRON AGE

1855-1905.

New York, Thursday, May 4, 1905.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.

## The Iron Age Directory.

During the course of the next week there will be sent to every subscriber to *The Iron Age* a copy, bound in red cloth, of *THE IRON AGE DIRECTORY*, being the ninth annual edition of this work. It is a compilation showing the products of the 1400 regular advertisers in *The Iron Age*, arranged under the proper headings and with abundant cross references. Embracing as it does nearly every important article of the Hardware, Iron, Machinery and Metal trades, it meets in an admirable manner the demand for a handy book of reference for buyers in search of the names and addresses of producers. It goes into much greater detail than the ordinary directories, and gives the names of makers of many specialties and odd products which are not accessible in any other form. Its usefulness after many years of experience is recognized by an increasing circle of the readers of *The Iron Age* which justifies the labor that we have bestowed upon it and the outlays which its publication has involved.

## Our Foreign Trade in Manufactured Products.

Exports of manufactures are up to high water mark. The figures for March, just issued by the Bureau of Statistics of the Department of Commerce and Labor, are \$50,718,082, being much in excess of any preceding month and about \$8,500,000 over corresponding exports in March of last year. In October last the exports of manufactures aggregated \$47,355,678, but at that time very heavy shipments of steel rails were being made to Canada to forestall the new duties, which became effective November 1. No such extraordinary stimulant was operative in March to swell our outgoing shipments of manufactured merchandise. Hence the great value reached must be considered a natural and altogether healthy growth. The total exports under this classification for the nine months ended March 31 were \$392,890,044, against \$330,572,215 in the corresponding period of the previous fiscal year and \$299,262,425 in the same period of the fiscal year 1903. These statistics are exceedingly gratifying, in view of the very prosperous condition of our home trade. So many branches of industry are being driven to the utmost to supply the domestic demand that a falling off in exports of manufactures would not seem unreasonable. Usually foreign trade suffers when the home demand is so great as at present.

The imports of manufactures in March also showed an increase on recent periods, although the volume of such business is quite small as compared with the exports. The figures for March are \$15,209,909, and it is necessary to go back to September, 1903, to find a month which ran larger than this amount or even very close to it. Growth in imports of manufactured merchandise is always to be expected in times like these. Even though our domestic requirements may be fully met in most lines of staple products, imports are made in increasing volume to be used in manufacturing for export under the benefit of the drawback. Our columns have been

bearing frequent testimony to the enterprise of manufacturers in securing rulings of the Treasury Department on proposed importations of partly manufactured products to be worked up and exported under another form.

It is exceedingly desirable that the growth in our exports of manufactures should continue. In very many lines we need a larger field than the home market affords. So far as our manufacturers are concerned, they may be depended upon to use their utmost efforts to increase their trade abroad, and if the progress of our export business depended solely upon what they may be able to do the future might be regarded as fairly assured. But, as it happens, there are other elements to be considered. Prominent among these is the policy of countries which are or have been good customers of our manufacturers to interpose greater tariff barriers to our trade with them. In the estimation of many of our countrymen this is not a serious matter, and they point to the very figures we have quoted above as proof that we are overcoming with ease the obstacles of adverse tariffs. This, however, does not prove that we will always be able to do so. We have already lost good markets in Canada simply because we failed to appreciate the importance of the Canadian overtures for a reciprocity treaty some years since. Now we are told that the Canadian reciprocity sentiment has subsided beyond hope of revival and our exports of manufactures to Canada must surely show a decided shrinkage as the years roll on. Russia is another instance of the closing of a once important market for many of our goods which might have been kept open if a more conciliatory policy had been pursued. It is stated that the new Ambassador to Russia is keenly alive to the importance of securing better treatment for American manufactures and that he is working to have the question of the extra Russian duty on machinery reopened, with some prospects of a favorable outcome. On March 1 of next year Germany will put in effect a new tariff schedule which will greatly handicap the manufacturers of this country in reaching Continental markets, as it embraces ingeniously devised reciprocity treaties with other countries which will put us to great disadvantage. Due notice has been given to us of this movement and the way has been left open for us to avoid the extreme tariff duties provided by the new German schedule if we will avail ourselves of it. Instead of merely studying the figures of growth in our export trade and complacently concluding that they will continue to grow simply because they have grown, we should look at other conditions and so shape our relations with other countries that the pathway of our manufacturers be not impeded by artificial barriers.

## Manufacturing Interests and the Public Library.

The development of the American public library and the broadening of its radius of usefulness are opening to the manufacturer, the engineer and the student new opportunities in the pursuit of knowledge bearing upon their needs. Few people understand how much any library can do for them in providing a wide range of the best and latest works on any desired subject. Most libraries are from necessity restricted as to the publications which they may own. Literature has grown to such ponderous proportions that a complete library must be a thing unknown. Librarians and others having authority in the management of the public library, realizing these conditions, have entered upon a system of the



mutual lending of books, so that a person living pretty much anywhere in America, excepting perhaps in the newer and more sparsely settled sections, may through his home library secure from other libraries the all important tools in the way of the best books bearing upon the subject under investigation or study. A few of the larger and better libraries have not yet begun to loan their books. On the other hand, many of them are glad to extend their privileges to other similar institutions and in return to receive the same favors. For example, the fine John Crerar Library of Chicago, an exclusively scientific library, loans its works to other libraries, throwing open a wide and valuable source of knowledge of which scientific men anywhere might be glad to avail themselves. It is believed that the Congressional Library at Washington, which has two copies of every work copyrighted in the United States, will soon adopt the system of book loaning, which will be in itself a golden source of knowledge to those who realize its availability. The trouble to-day is that few people, comparatively speaking, know of the opportunity that the new library practice has thrown open to them. It is far reaching. The resident of the small town, with its little library, may through its librarian procure the loan of exactly the works that he may need in his researches. In manufacturing the designers and engineers find themselves more and more dependent upon published works which an age of specialization has made prolific and very valuable. In the designing of a new machine, in the development of an idea for an electrical device, in the working out of designs where beauty of outline and motive are desirable, it is necessary that the works of the authorities be available, else the best results are impossible. The librarian of any library can cite hundreds of instances where real assistance, which may be measured later in financial returns, has been rendered through the procuring of the writings or designs of the best men. One librarian of an Eastern city of 125,000 people loans and borrows books from libraries as far west as Denver. Such a relationship of libraries is a co-operative assistance which will become more and more prolific of good results as more libraries enter upon the plan, and, what is more important still, as the people find out that this opportunity is open to them.

Abroad the lending of books from one library to another has been in vogue for many years, the great Continental libraries and those of Great Britain exchanging books and manuscripts without stint where they are needed for important literary or other researches. But the work has been confined to the benefit of the few, of the great scholars and scientists whose names constitute the open *sesame* to everything that can be of assistance to them, for the veneration of scholarship and scientific greatness is very marked across the water. On the other hand, the library movement in Europe has not progressed with anything like the broad regard for the public at large as compared with this country. In the large cities the libraries are open to the public, and in smaller places there are free circulating libraries. But the reference library, with its almost limitless resources when coupled with the borrowing system, is quite unknown, excepting for the favored few. There is just opening in Manchester, England, a technical bureau intended to fill this want, its purpose being the lending of technical books of all kinds to annual subscribers—for a consideration, of course—principally by means of the postal service. The subjects covered will include all branches of engineering, surveying, architecture, sanitary science, &c. There are people in every country who would be glad to subscribe to such a bureau, but the great majority of those who would en-

joy such advantages are without the means, and its scope must necessarily be limited as compared with the opportunities of the public library where a number of works on the subject in hand may be made available at short notice, to be supplemented later by other works borrowed from libraries more fortunate.

Librarians hope that some time, not too far away in the future, there will be a wonderful central library, located in New York or Washington or Chicago or some other great center, intended for the distribution of books to working libraries all over the country. The central library would occupy the same position to the public library that the latter occupies to the reading and investigating public. It would be stored with a complete collection of standard works upon every conceivable subject, as a reference library and not as a library of fiction. It would to an extent take the place of the present system of loaning and borrowing. Its technical collection would be as fine and perfect as its collection on art or music. But the system growing into use to-day is as well in its way as this hoped for central library of the future. And the present system will grow as the demand of the users of libraries compels it.

### Textile Mills and Electric Power.

The statement of one of the speakers at the recent meeting of the Cotton Manufacturers' Association at Boston that 10 per cent. of the 1,165,000 horse-power used for textile manufacturing in the United States is now obtained from electric motors is full of significance in considering this great industry as well as looking ahead at the business of the manufacturers of electrical equipment. The figures are based, it was stated, on actual investigation, and may be taken as reliable. The electric drive, both direct and for a group, is especially valuable in textile manufacturing, and most important of its various lines in the cotton industry. The margin of profit in cotton manufacturing is so small that in the consideration of costs it is generally conceded that the most perfect equipment is the most economical. Losses in power must be eliminated. The motor accomplishes this in ridding the mill of long and power devouring lines of shafting; the shutting down of whole mills because of an accident to the shafting in a single department, idleness being confined to one department or part of a department where the group drive is employed, or to the single machine where there is direct drive.

In such a cotton manufacturing country as New England, laboring under serious natural disadvantages as compared to the Southern cotton country, it is important that water power be employed wherever possible, and the use of electricity enables the manufacturer to draw for power from privileges not directly at the mill flume, perhaps doing away with the necessity of starting up the auxiliary steam engine, which in many localities is a great expense because of the high cost of coal due to distance from tidewater and from the mines. Another advantage of the electric drive is the ease and accuracy with which the amount of power consumed by one department or one machine may be measured, thus keeping a sharp check upon uneconomical operation. One department may be run overtime at no waste of power from the running of shafting in the whole of a mill which consumes large amounts of power, causing a direct waste. A significant remark of an English textile cotton manufacturer was quoted at this meeting: "We have been watching your progress in America, and believe that your experimental work is nearly completed. We're about ready to adopt your system."

Between the demands that the textile industries of America and those of England and other European countries will make upon the electrical industry an important epoch in this field is promised. The textile people are determined to stay at the front. They will spend their money for the best, in order that the efficiency of their plants may be of the highest. This must be so, or else they will fall behind in the intensity of the competition. And the metal lines will profit, directly and indirectly, as the improvements of the textile mills go on.

## OBITUARY.

William Tod, president of the William Tod Company, Youngstown, Ohio, died from heart failure April 27, after a short illness, aged 62 years. He was a son of the late David Tod, former Governor of Ohio, and was born at Warren, in that State, on July 30, 1843. The next year his father removed to Brier Hill, near Youngstown, and started to develop the coal deposit on his property. In 1847, when this work was barely under way, he was appointed Minister to Brazil by President Polk and took



WILLIAM TOD.

William with the other children to that country, remaining until 1851. Returning home, the family lived at Youngstown, except during the period of David Tod's Governorship, when they lived at Columbus.

William Tod was given a common school education and in 1868 he became connected with Homer Hamilton in the foundry business, later manufacturing the Porter-Hamilton engine for general power service and especially for the iron and steel trades. Devoting all his energy to the business Mr. Tod became an important factor in it. Associated with John Stambaugh, Sr., Paul Jones and Homer Hamilton, the plant was built up and finally became a partnership under the name of William Tod & Co. Upon the formation of the corporation the William Tod Company Mr. Tod was elected president. To-day it is one of the most important concerns in its line in the country. Mr. Tod was also deeply interested in other manufacturing enterprises in the vicinity of Youngstown, especially in the Brier Hill Iron & Coal Company and the Youngstown Steel Company, and took an active part in all movements for the advancement of the city and the betterment of his fellow men. He leaves a widow and two sons.

### NOTES.

JOHN BRINTON HASTINGS, an inventor of some note in connection with the manufacture of iron, died at Parkersburg, W. Va., April 19, aged 69 years. He was born

at Bellefonte, Pa., spent his youth at Wheeling, W. Va., and for the greater part of his life was identified with the rolling mills at Ironton, Ohio.

BRUNO KERL, the famous German professor of metallurgy, died at Berlin at the age of 81.

ROBERT M. WHITEHOUSE died at Dover, N. H., April 25, aged 82 years. He had a long experience as a mechanical engineer. He was at one time superintendent of the repair shops of the Connecticut River Railroad, Northampton, Mass., and later went to Russia to take charge of the rolling stock of the Nicolai Railroad, between St. Petersburg and Moscow. Returning to America in 1862, he became the mechanical engineer for the Nottuck, Silk Company, Florence, Mass., and consequently again took charge of the Connecticut River Railroad's repair shops, Springfield, Mass. He engaged in business for a time at Flint, Mich., under the firm name of the Genesee Iron Works, and was also in the hardware business in that place as a member of the firm of Morse, Kimball & Co.

WILLIAM BREWSTER WOOD, a retired iron manufacturer, died April 21, at his home in Philadelphia. He was a son of Thomas Wood and a grandson of Alan Wood, founder of the Alan Wood Iron & Steel Company.

JAMES EVELETH MAYNADIER, a prominent Boston patent lawyer, died at Brockline, Mass., April 26, aged 65 years. He was a native of Baltimore, and at the time of his death was senior partner of the patent firm of Maynadier & Rockwell.

EDWARD A. SUMNER, through whose efforts the Detroit Radiator Works, now owned by the American Radiator Company, was established at Detroit, Mich., died April 20 at St. Augustine, Fla., whither he had removed for his health. His son, Edward A. Sumner, Jr., is present manager of the works.

LORENZO S. GRAVES, founder of the Graves Elevator Works, Rochester, N. Y., died April 22, aged 73 years. Born in Massachusetts, and for many years engaged in the shoe business in his native State and afterward at Rochester, he turned his attention to the manufacture of shoe machinery and then to the building of elevators. He introduced his first elevator in 1875, and in the following year brought out the hydraulic elevator, which resulted in the establishment of one of the largest elevator manufacturing plants in the country. Mr. Graves retired from business a few years ago. He is survived by his widow and one son.

**The Technical Publicity Association.**—The first annual meeting and banquet of this association were held April 28 at the rooms of the Hardware Club, New York. Present were the advertising managers of most of the large machinery manufacturing houses having headquarters in New York, including the Westinghouse Companies, General Electric Company, Sprague Electric Company, Crocker-Wheeler Company, Robins Conveying Belt Company, Rand Drill Company, Ingersoll-Sergeant Drill Company, International Steam Pump Company, Niles-Bement-Pond Company, Yale & Towne Mfg. Company, Cameron Steam Pump Company, Hall Signal Company, American Wood Working Machinery Company, Allis-Chalmers Company, De La Vergne Company and the John A. Roebling Sons Company. Emerson P. Harris delivered an address on "The Machine for Selling Machinery." The following officers were elected: President, P. F. Kobbe, Jr., Rand Drill Company; first vice-president, H. M. Cleaver, Niles-Bement-Pond Company; second vice-president, C. B. Morse, Ingersoll-Sergeant Drill Company; secretary, George H. Gibson, International Steam Pump Company; treasurer, Henry M. Davis, Sprague Electric Company. The Executive Committee is composed of the officers and Rodman Gilder, Crocker-Wheeler Company, and Graham Smith, Westinghouse Companies.

Notice is just being sent out by F. E. Lukens, Chicago, secretary of the National Association of Agricultural Implement and Vehicle Manufacturers, announcing that the next annual convention of that body will be held at Niagara Falls September 27, 28 and 29.



## Gas Producer Power Plants.\*

BY SAMUEL S. WYER, COLUMBUS, OHIO.

The installation of the gas producer power plant in America has been so unusual that all engineers have viewed it with interest; a large majority, however, regard it with a lack of confidence and many with positive distrust. Despite the fact that European engineers have usually been less inclined to take the initiative along experimental lines than are Americans, they have, nevertheless, developed the gas producer plant to a very high state of efficiency to which they were forced by the necessity of economy in fuel consumption.

The gas producer power plant is so common in Europe that engineers as well as the general public regard it with the same degree of confidence that is now universally placed in steam plants. Gas engines, both small and large, are in general use there, and central stations aggregating several thousand horse-power are quite numerous.

The fact that gas producer power plants have received so little attention in America may be attributed to five conditions: (1) ignorance and prejudice, (2) newness of work, (3) inadaptability of gas engines, (4) fuel economy not imperative, (5) smoke nuisance not given attention.

1. *Ignorance and Prejudice.*—The only literature pertaining to gas producer power plants is that found in the various technical journals and in the transactions of engineering and other technical societies. In many cases the papers are of a fragmentary character, and seldom are they complete or comprehensive. It may be that the lack of reliable data available to engineers is the cause of the ignorance and prejudice that exists concerning this important branch of engineering.

2. *Newness of Work.*—The manufacture of producer gas is an old process, and gas engines have been developed to a very high stage of mechanical efficiency, hence there is no valid reason why such installations should be regarded as experimental.

The Winchester Repeating Arms Company, at its plant in New Haven, Conn., has a Loomis-Pettibone gas producer plant, built primarily to furnish gas for fuel purposes (such as for annealing ovens, furnaces, &c.); a 100-horse-power Westinghouse gas engine was installed some time ago, and later three direct connected units, each of 175 horse-power, have been ordered. At the present time this example is one of the best instances in America of an industrial producer gas plant where gas is furnished both for fuel and for power.

The following list comprises some of the larger gas producer power plants now in operation in America:

Moctezuma Copper Company, Nacozari, Sonora, Mexico.  
Guggenheim Exploration Company, 700 horse-power, Santa Barbara, Chihuahua, Mexico.

Detroit Copper Mining Company, 1000 horse-power, Morenci, Ariz.

Rockland Electric Company, 1000 horse-power, Hillburn, N. Y.

Potosina Electric Company, 600 horse-power, San Luis Potosi, Mexico.

Velardeña, Mining & Smelting Company, 2000 horse-power, Velardeña, Durango, Mexico.

Sayles Bleacheries, 250 horse-power, Saylorsville, R. I.

It is obvious that much has already been accomplished in this important field of power generation.

3. *Inadaptability of Gas Engines.*—No gas producer power plant can be successful unless the gas engine is adapted to suit the particular gas available for its use. On the authority of Westinghouse, Church, Kerr & Co., an engine which will develop 100 horse-power with natural gas will give only about 80 horse-power with producer gas—a loss of 20 per cent. With a 200 horse-power engine this loss would be about 15 per cent., and with sizes above 300 horse-power it would be about 10 per cent. Hence, the obvious necessity of designing the engine to suit for the particular fuel it is to use. Several failures have been made by neglecting this important point.

4. *Fuel Economy Has Not Been Imperative.*—In the list of plants given above, it will be noticed that most of them are in remote regions where the cost of fuel is high, hence the high economy of the gas producer plant was necessarily a feature that commended itself.

5. *Smoke Nuisance.*—The laxity of the laws regarding the smoke nuisance has not made it imperative for manufacturers to give attention to the prevention of smoke. As soon as regulations concerning the smoke nuisance are enforced the gas producer industry will receive a new impetus on account of the easy solution that the gas producer plant offers for this trouble.

### General Data.

The following data relative to the design, operation and maintenance of gas producer plants are given to show their advantages:

1. *Solution of Smoke Problem.*—A good gas producer, from the very nature of its construction and operation, does not allow the smoke to escape into the atmosphere; hence the gas producer itself presents a practical solution for the elimination of the smoke nuisance. The non-requirement of a chimney means a large saving in the first cost and in the maintenance of a power plant, and is an additional advantage in plants where the aesthetic features of the design are of importance; for instance, in the case of a municipal power plant.

2. *Labor.*—The cost of labor required to operate a gas producer plant is about the same as that required in a steam plant of similar size. However, during the time that a gas producer plant is idle it requires less attention than does a steam boiler.

In the case of a municipal pumping station, the labor required to operate the producer gas plant would be one-half that of a similar steam plant, the gas plant being operated as follows: The gas producers to use coal for supplying the gas to operate a three cylinder vertical gas engine direct connected to a triplex double acting power pump. In this case the usual fire engine will be dispensed with, and, should a fire occur, the requisite pressure will be obtained by pumping directly into the system. For ordinary domestic supply the pump will deliver the water into a water tower, from which the mains receive the supply as needed. In every case the maximum quantity of water required during a fire is much larger than the average domestic consumption; hence the pump must be designed for this maximum quantity. As a result the working of the pump at its full capacity for 6 out of 24 hours would furnish enough water for the daily domestic consumption; the pump would usually be operated from 7 to 10 a.m. and from 3 to 6 p.m.

A gas holder of sufficient capacity to run the pump for 30 minutes is to be filled before the producers are closed down. Compressed air is to be used to start the engine, which may be put into motion simply by moving a lever. The engineer is to live adjacent to the plant so that when an alarm is sent in to the hose company and simultaneously to the engineer's home and to the plant it would be possible for the engineer to have the pump at work direct into the system by the time the fire company could reach the fire and make hose connections.

Since the gas holder would supply the engine until the producers could be started, the above scheme of operation eliminates the necessity of a night fireman and the keeping up of at least 70 pounds of steam pressure in a steam plant. A similar arrangement could be equally well adapted for fire purposes in connection with large industrial plants.

With regard to the skill required, a producer gas power plant does not require any greater skilled labor than does a steam plant of similar size; however, in some cases it may require time for men trained to handle steam apparatus to become accustomed to gas engines and gas producers.

3. *Cost of Installation.*—Two well-known engineering concerns give the following data:

The cost of gas power plants, including gas generating plant and gas engines, up to 500 horse-power, is about 25 per cent. higher than the cost of a steam plant of similar size. Large plants, from 1000 horse-power upward, cost about the same as a first-class steam plant of similar size.

\* Presented at the Washington meeting of the American Institute of Mining Engineers, May, 1905. By arrangement with the author the material of this paper has been taken for publication from his complete monograph entitled "Gas Producers," which is to be published by the Engineering and Mining Journal Company, New York.

4. *Costs of Repairs.*—The cost of repairs on a gas producer plant will not exceed that of a boiler plant.

5. *Use of Cheap Fuels.*—In order that a gas producer plant shall be commercially successful, it must be able to make, from a low priced fuel, gas that is sufficiently clean for use in an engine. Bituminous slack is usually the lowest priced fuel to be had; however, anthracite culm, or even wood, may be cheaper in some localities. In all cases the percentage of sulphur must be low if the gas is to be used in a gas engine. Frequently the use of a mechanically washed coal will be economical.

6. *Scrubbing the Gas.*—The only reliable way to remove tar and other hydrocarbons from gas made from soft coal is to have the producer so arranged that the gas comes in close contact with an incandescent mass of carbon. No mechanical means has yet been found to be successful, although several forms of centrifugal apparatus have been tried. For the removal of fine dust particles, however, centrifugal fans have proved very satisfactory.

7. *Fuel Economy During Hours of Idleness.*—The stand-by loss of heat is very small, being limited to radiation only; a gas producer is tightly closed during the time it is not making gas and the entrance of air is thereby prevented. This feature is a marked advantage over a steam boiler under similar conditions.

8. *Time Required to Start Producers.*—Even after a producer has been idle for several hours it may be started and can be working at its full capacity within 15 minutes. A gas holder is generally used in connection with the producer, from which a supply of gas can be taken to start the gas engine instantly and keep it in operation until the gas producers are making gas.

9. *Time Required to Stop a Gas Producer.*—A gas producer may be stopped instantly by simply shutting off the supply of air and steam.

10. *Composition of the Gas.*—The gas from the gas producer is quite uniform in composition, and as it usually passes first to a holder before reaching the gas engine, it becomes thoroughly diffused, thus insuring a still greater uniformity.

11. *Thermal Efficiency.*—The thermal efficiency of gas producers is generally about 80 per cent. and in some cases it is even higher than this value.

12. *Automatic Feeding.*—It is much easier to use an automatic feeding device on a gas producer than on a steam boiler, because all producers are placed vertically and the fuel can be dropped into position by gravity. The use of an automatic feed always decreases labor and insures more uniformity in the composition of the gas produced.

13. *Rate of Gasification.*—The rate of gasification in a gas producer is relative to the character of the coal used. The best rate determined by experience is 12 pounds of coal per square foot of grate area per hour, although some makers have advised as high as 20 pounds of coal. Experience has also demonstrated that too rapid driving opens a wide door for the admission of adverse gasifying conditions.

14. *Poking the Gas Producer.*—The amount and frequency of poking a gas producer will depend on the nature of the fuel and the design of the producer. The mechanical agitation of the fuel bed (as in the Kitson and Fraser and Talbot producers) eliminates poking entirely. In using bituminous coals the difficulties of clinker formations is augmented by the production of coke. The judicious use of a steam blast and automatic feeding will generally reduce poking to a minimum and, in some cases, will eliminate it entirely. Hand poking is very laborious for the attendant and usually it will be shirked whenever possible. Gas will usually escape around the poke holes while the producer is being poked, which will vitiate the air in the producer room and also affects the regularity of the composition of the gas.

15. *Calorific Value of Producer Gas.*—The calorific value of producer gas varies from 125 to 150 B. T. U. per cubic foot.

16. *Economy.*—The generation of 1 brake horse-power per hour with from 1 to 1.25 pounds of coal or 3 pounds of wood is very common producer gas power plant practice at the present time, and the gas contains

at least 80 per cent. of the heat energy resident in the fuel.

17. *No Loss from Condensation.*—A very important advantage of the producer gas installation is that the gas does not condense or lose power on its way to the gas engine. On the contrary, the cooler the gas the better it is for the engine. With steam the condensation is considerable.

18. *Leakage of Gas.*—It is easy to prevent leakage of gas from the piping, owing to the low pressure of the gas (about 2 inches of water); whereas, with steam, there is often much loss and inconvenience on this account.

19. *Saving in Shafting.*—By using isolated engines a large saving in shafting may be made in many cases. It is not possible to do this in steam plants and still maintain a good economy.

20. *Floor Space.*—The floor space required for gas holders, gas producers and auxiliary apparatus is about the same as that required in a steam plant; the holder, however, need not be placed adjacent to the producers, but at any other convenient place.

21. *Control of Operation.*—A gas producer plant is under much better control than the average steam plant, because in the gas producers the air supply rate of gasification as well as the fuel supply can be regulated more easily.

22. *Storing of Heat Energy.*—One of the most potent advantages of the gas producer plant compared with the steam plant is the ability of the former to store the heat energy in a holder where it may be drawn upon for immediate use. In this way irregularities and fluctuations of load need not affect the regularity of the action of the gas producer. This condition means an economy of operation and convenience of use that are impossible with any steam plant.

23. *Dual Use of Gas.*—Another important advantage of the gas producer power plant is that, in many cases, the gas may be used both for power and for metallurgical purposes, the same pipes being used to supply engines and furnaces. The plant of the Winchester Repeating Arms Company, at New Haven, Conn., illustrates an installation of this character.

24. *Economy of Water.*—In many cases it is a serious matter to secure a sufficient supply of water for a steam plant and sometimes, even with an adequate supply, the quality of the water is such that it is entirely unfit for use in a steam boiler. One of the most annoying difficulties of many steam plants is the trouble caused by the corrosion and subsequent cleansing of the boilers, together with the maintenance of feed water purifiers.

The gas producer power plant forms an almost ideal solution for the problem of water supply. With a producer in normal condition, the consumption of water will not exceed 2 pounds per brake horse-power hour. The water used in cooling the gases in the scrubber may be cooled in a simple tower and used repeatedly.

25. *Operating Isolated Machines.*—There is no difficulty in piping gas for several thousand feet in order to reach an engine that drives an isolated machine; this often makes it possible to dispense with abnormal lengths of line shafting and the consequent friction loss or other unsatisfactory methods of power transmission. This condition is especially valuable in places where electrical power is not used.

26. *Range of Sizes.*—Standard gas producers now range from a few horse-power to more than 500 horse-power in size.

27. *Danger from Explosion.*—There is less danger of explosion in a gas producer plant than there is in connection with a steam plant; moreover, should an explosion occur it would be much less violent and destructive than that of a steam boiler.

28. *Location of Producer Plant.*—If desired, the gas producer plant may be placed near the fuel supply, which in many cases would reduce the expense of transportation, the gas being piped to the gas engines of furnaces where it is to be used. This arrangement, which is impossible with a steam plant, means a decided saving in favor of the gas producer installation.



29. *Future Field for Gas Producers.*—The preceding paragraphs show the many strong advantages of the gas producer as a power generator; the large number now in successful operation shows that the experimental stage has been passed and that they have become a formidable competitor of the steam boiler. The time is not far distant when gas producer locomotives for railroad service, gas producer portable engines and gas producer power plants for marine service will be in common use.

The advantages of the gas producer for each of the above three classes are:

I. GAS PRODUCER LOCOMOTIVES, being—

1. *Smokeless.*—a, Trains and stations may be kept cleaner; b, tunnels may be passed through with greater safety; c, comfort of passengers will be increased.

2. *Cinderless.*—a, Fuel loss will be decreased; b, comfort of passengers will be increased; c, large fire losses due to sparks will be eliminated entirely; d, insurance rates on property adjacent to railroads will be less.

3. *More Economical.*—a, In fuel, since the amount used would be less than one-half that used on steam locomotives; b, in water, since the amount used would be less than one-eighth that used on steam locomotives; c, in time, since the time required to take fuel and water will be less; d, in labor in firing on account of automatic feed and decreased amount of fuel used; e, in idleness, since stand-by losses are very low; f, in number of fuel and water stations required.

4. *Safer,* since the danger of boiler explosions is eliminated.

II. GAS PRODUCER PORTABLE ENGINES, being—

1. *Smokeless.*—a, Large fire losses due to sparks will be eliminated entirely; b, insurance rates on property adjacent to where an engine is used would be less.

2. *More Economical* in, a, water; b, fuel; c, labor; d, time required to secure fuel and water.

3. *Safer,* the danger of explosion being eliminated.

III. GAS PRODUCER POWER PLANTS FOR MARINE SERVICE, being—

1. *Smokeless.*—a, Ships may be kept cleaner; b, passengers will have more comfort; c, a battle ship could conceal its location more easily.

2. *More Economical* in, a, fuel; b, water; c, time required to fuel; d, bunker capacity; e, floor space; f, apparatus required, since all of the condensing machinery would be dispensed with.

## Labor Notes.

The annual convention of the Amalgamated Association of Iron, Steel and Tin Workers is now in session in Detroit, Mich. The convention will last two or three weeks. The Wage Committee has been in session nearly a week, and the major portion of its report is already in the hands of the printers. The report will be complete before the convention is ready to receive it, which will not be before the last of the week.

The employees of the Alan Wood Iron & Steel Company, Conshohocken, Pa., have been granted a 10 per cent. increase in wages.

The blast furnace workers in Sharon, Sharpsville and West Middlesex, Pa., have been given an increase in wages. The advance was made voluntarily, and is virtually a restoration of the cut made in January, 1904.

A model concentrating mill, one-fourth the size of the regular concentrating mills used in Western smelters, has been received by the Department of Engineering of Iowa State University at Iowa City. The mill will be immediately set up in the old engineering building, but accommodations are being provided for it in the new building now being built. The model is a little over 22 feet high and is an exact reproduction of the regular size mills employed. It was built by the American Concentrating Company, Joplin, Mo., and Hendrie & Bolthoff, Denver, Col. The mill is capable of reducing ores and giving practical demonstrations of the processes employed, and will be operated by students in mining engineering.

## March Iron and Steel Exports and Imports.

An unexpected increase is shown in the exports of iron and steel and manufactures thereof in March, according to the report just published by the Bureau of Statistics of the Department of Commerce and Labor. The total value of these exports, excluding ore, is placed at \$12,446,800, against \$9,179,124 in February and \$8,957,989 in January.

The presumption had been strong that these exports would show a diminution on account of the very heavy domestic demand, which would seem to require the full domestic production to meet its unprecedented requirements. Taking the commodities for which quantities are given, the March exports foot up 89,879 gross tons, as compared with 70,429 tons in February and 56,810 tons in January. The details for the month and for the nine months of the fiscal year ending with March are given in the following table:

Commodities.	March		Nine months.	
	1905.	1904.	1905.	1904.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron .....	3,281	3,954	38,665	27,047
Scrap .....	443	1,937	17,369	11,010
Bar iron .....	2,862	3,058	23,796	14,019
Wire rods .....	742	3,035	13,142	11,961
Steel bars .....	2,692	1,093	19,251	11,062
Billets, ingots, blooms .....	24,124	36,908	189,742	85,090
Hoop, band, scroll .....	150	516	2,543	2,110
Iron rails .....	44	577	75	1,317
Steel rails .....	24,885	17,748	339,831	57,737
Iron sheets and plates .....	359	173	3,449	3,982
Steel sheets and plates .....	7,591	2,736	48,578	11,098
Tin plates andterne plates .....	298	502	5,111	830
Structural iron and steel .....	5,194	1,843	51,936	21,802
Wire .....	12,449	11,327	86,513	81,373
Cut nails .....	455	639	5,862	7,048
Wire nails .....	3,691	2,963	26,518	24,679
All other, including tacks .....	619	204	2,832	1,801
Totals .....	89,879	89,213	875,213	373,966

The commodities which show a heavy gain over February are billets, steel rails, steel sheets and plates, wire and wire nails.

The total value of iron and steel exports for the nine months ending with March was \$98,005,188, against \$78,519,803 in the corresponding period of the previous year.

The imports of iron and steel and manufactures thereof show a slight increase in March as compared with February. The total value for March, excluding ore, was \$1,929,892, against \$1,703,073 in February. Taking the commodities for which quantities are given, the total for March was less than in February, the figures being respectively 25,924 and 29,472 gross tons. Reductions are shown in pig iron, bar iron, wire rods and wire. The detailed figures for the month and for the nine months of the fiscal year ending with March are given in the following table:

Commodities.	March		Nine months.	
	1905.	1904.	1905.	1904.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron .....	14,388	12,400	69,514	174,176
Scrap .....	1,542	2,498	8,856	23,675
Bar iron .....	1,414	1,203	17,644	25,452
Rails .....	361	1,135	8,357	33,729
Hoops, band and scroll .....		18	1,584	1,596
Billets, slabs, bars, &c., steel in forms, n.e.s. ....	682	1,120	7,048	89,834
Sheets and plates .....	306	62	1,661	9,464
Tin plates andterne plates .....	5,522	6,669	54,503	37,197
Wire rods .....	910	785	10,728	14,235
Wire and articles made from .....	516	513	2,833	4,015
Structural iron and steel* .....	269	1,770	2,140	12,697
Chains .....	10	23	211	267
Anvils .....	4	5	103	193
Totals .....	25,924	28,201	185,182	426,530

\* Included in "All other" prior to July 1, 1903.

The total value of the imports of iron and steel and manufactures thereof, excluding iron ore, was \$16,273,796 in the nine months of the fiscal year ending with March, against \$21,341,908 in the corresponding period of the previous fiscal year.

### The General Electric Company.

The annual report of the General Electric Company, issued last week, makes a much better showing for the past year than the report of many other industrial corporations, the falling off in the volume of business having been only about 6 per cent. The income account for the fiscal year ended January 31, as compared with the previous year, is as follows:

	1905.	1904.	Decrease.
Total sales.....	\$39,231,328	\$41,699,618	\$2,468,290
Expenses .....	31,749,644	32,890,586	1,140,942
Profit on sales.....	\$7,481,684	\$8,809,032	\$1,327,348
Royalties, interest, &c....	810,098	945,542	135,444
Year's profit.....	\$8,291,782	\$9,754,574	\$1,462,792
Sales of securities.....	281,927	138,644	*143,283
Total income.....	\$8,573,709	\$9,893,218	\$1,319,509
Interest on debentures....	75,672	76,007	335
Balance .....	\$8,498,037	\$9,817,211	\$1,319,174
Depreciation factories....	1,778,492	2,027,841	249,349
Balance .....	\$6,719,545	\$7,789,370	\$1,069,825
Patents, &c., written on..	759,654	1,470,099	710,445
Balance for division..	\$5,959,891	\$6,319,271	\$359,380
Dividends .....	3,684,384	3,508,284	*176,100
Surplus .....	\$2,275,507	\$2,810,987	\$535,480
Previous surplus.....	7,293,689	4,482,702	*2,810,987
Total surplus.....	\$9,569,196	\$7,293,689	*\$2,275,507

\* Increase.

Following is the condensed general balance sheet as of January 31:

Assets.			
	1905.	1904.	Increase.
Cash .....	\$6,529,116	\$3,289,445	\$3,239,671
Stocks and bonds.....	14,488,269	14,665,346	*177,077
Real estate.....	359,980	424,083	*64,103
Notes and accounts receivable .....	16,747,450	15,207,481	1,539,969
Work in progress.....	2,009,805	2,046,488	*36,683
Merchandise inventories..	11,999,725	11,806,119	193,606
Factory plants.....	7,500,000	6,500,000	1,000,000
Patents, franchises and good will.....	2,000,000	2,000,000	.....
Total .....	\$61,634,345	\$55,938,962	\$5,695,383
Liabilities.			
Gold coupon deb. (3½ per cent.) .....	\$2,049,400	\$2,049,400	.....
Gold coupon deb. (5 per cent.) .....	78,000	82,000	*\$4,000
Accrued interest on deb.	650	683	*33
Accounts payable.....	1,345,145	1,810,665	*465,520
Unclaimed dividends.....	2,011	1,825	186
Deferred liabilities.....	342,000	834,000	*492,000
Capital stock.....	48,247,934	43,866,700	4,381,234
Surplus .....	9,569,196	7,293,689	2,275,507
Total .....	\$61,634,345	\$55,938,962	\$5,695,383

\* Decrease.

President C. A. Coffin says: "It will be observed that the amount written off factory plants is substantially 60 per cent. of the cash expended thereon during the year. It is expected that expenditures of this nature will be smaller during the current year than in either of the two previous years."

Vice-President Eugene Griffin says in part: "Among the important contracts are contracts with the New York Central Railroad for 30 90-ton electric locomotives, for 40,000-kw. capacity steam turbines, for entire switch-board plants for the Mount Morris and Yonkers power stations. The first high speed passenger locomotive for the New York Central Railroad has been thoroughly tested with satisfactory results. The electrical work of the New York Central Railroad has excited much interest among the officials of other railroads, and from the numerous inquiries and requests for plans and estimates which we receive it is evident that we are entering upon a most interesting phase of electrical development in connection with steam railroads, and that it will not be many years before all suburban trains in the vicinity of our large cities will be operated by electric power."

"During the year we received 187,350 separate orders (not including contracts), an average of 624 per working day. The average orders per working day indicate the growth of the business, as follows:

1900.....	473	1903.....	541
1901.....	500	1904.....	570
1902.....	533	1905.....	624

"While our total business was less in 1904 than in 1903 in money value, the number of contracts and orders was greater, resulting in more work for the organization."

Vice-President E. W. Rice, Jr., says in part: "Engineering effort has, as in the past, been largely devoted to the extension, improvement and cheapening of our established lines of apparatus. The commercial success of long distance transmission systems is generally recognized and the number of such undertakings has increased. It is not practicable to even mention the constantly increasing number of applications of electric motors. One interesting instance is that of the high speed electric motor centrifugal pump, which promises to replace the steam pump for supplying water to cities. The electric pump occupies about one-quarter of the space, costs less and is more efficient than the present steam pump."

The report also states that the company has no note payable and that during the past year it did not borrow money or incur obligations; nor has it credit been used either by issuing notes, indorsing customers' paper for discount or lending its name in any way. Its established policy of maintaining sales on a basis of cash, or short credit to desirable customers, has been adhered to.

All the company's plants are free from mortgage or other lien. On January 31, 1893, the book value of all three factory plants was \$3,958,528. During the 12 years from that date to January 31, 1905 (over and above all ordinary expenditures for the maintenance and repair of buildings and machinery), additions of lands, buildings, machinery, &c., have been made at a total cost of \$17,074,010, making the total book cost of the plants 12 years a total allowance for depreciation of \$13,532,538, leaving their book value January 31, 1905, at \$7,500,000. This valuation was divided as follows: Schenectady plant, \$5,176,724.29; Lynn plant, \$2,038,275.41; Harrison plant (lamp factory), \$285,000.30; total, \$7,500,000. About \$2,000,000, exclusive of the cost of patterns, special tools, &c., has been expended during the year for real estate, erection of new factories, extensions to existing buildings and for additional machinery.

The number of employees was increased to 18,000 during the year. The floor space of the plants now amounts to 4,100,000 feet, against 3,700,000 feet a year ago.

On the subject "Methods of Control for Variable Speed Motors" A. G. Wessling of the Bullock Electric Mfg. Company, Cincinnati, Ohio, the electrical department of the Allis-Chalmers Company, has recently lectured before a number of technical institutions of the country, including Cornell, Lehigh, Columbia, Harvard, Purdue, Michigan and Illinois universities, the Massachusetts Institute of Technology and the Rose Polytechnic Institute. The subject was treated with special reference to motors for driving machine tools. A history of the growth and development of the various methods used by the Bullock Company for obtaining variable speeds was covered, beginning with the old and now obsolete system of rheostatic control. This was followed by the type O system, a feature of which was the double windings on the armature of the motor, and that was in turn superseded by the multiple voltage system. The description given of this system included both the three and four wire methods.

The Buffalo, Rochester & Pittsburgh, the Bessemer & Lake Erie and the Wabash Railroad systems are stated to have effected an arrangement by which the three systems will unite their tracks and exchange freight at New Castle, Pa. The combination is said to be formed, and doubtless is formed, for the purpose of competing for freight business out of and into New Castle, which city now contains some of the most important plants of the United States Steel Corporation. The deal makes it certain that the Wabash will be extended into New Castle. By the terms of the arrangement the Wabash and the Buffalo, Rochester & Pittsburgh will exchange eastbound and westbound freight, respectively, and the Wabash will do the switching for all three of the roads in New Castle. The Wabash and the Buffalo, Rochester & Pittsburgh will be practically unified as a freight line. The new extension of the Bessemer, now being built to connect New Castle with the main line of the Bessemer at Queen Junction, near Butler, passes through large limestone fields.



## NEWS OF THE WORKS.

## Iron and Steel.

H. E. Ferree, Hannibal, Mo., wishes to correspond with engineers and practical furnace operators regarding the building of one or more pig iron manufacturing furnaces. Mr. Ferree with others has in mind the establishment of one plant and possibly more in Alabama, with a capacity of 400 tons daily, and also one in Virginia of about 200 tons daily capacity. Correspondence is also solicited from builders of retort coke ovens designed to save gas and by-products.

The Carpenter Steel Company's works at Reading, Pa., is being run on an increased scale now, the court having discharged Robert Jennings as receiver.

A meeting of the stockholders of the Tacony Iron Company, Philadelphia, Pa., was held April 27, when it was unanimously decided to increase the capital stock from \$50,000 to \$200,000. The company is planning some extensive improvements to its plant at Tacony, the plans for which have not yet been completed.

The plate mill at the Valley plant of the Republic Iron & Steel Company, Youngstown, Ohio, started up last week, the company having entered some good sized orders for plates.

T. J. Price, general manager of the Danville Structural Tube Company, Danville, Pa., and other well known business men of that city and Northumberland, Pa., have purchased the property of the Danville-Bessemer Company at Danville for \$56,500. They are now forming a company with a view to operate the plant, and by the time they get possession of the property in the latter part of May, the organization of the new company will be complete. It is the intention to operate the shovel works only.

The National Steel & Wire Company, Pittsburgh, Pa., which recently applied for a charter with a capital stock of \$25,000, has nearly completed its new plant at Hoboken on the West Penna Railroad, about 20 miles from Pittsburgh, and is now installing the machinery. The company will make needle wire, drill rods and fine wire for musical instruments, which will be drawn cold by a machine invented by Isaac Higgins. T. Rolland Higgins is secretary and has his headquarters at Hoboken.

The Bessie Furnace at New Straitsville, Ohio, will blow in about the middle of May.

Lawrence Furnace of the Bird Iron Company, Ironton, Ohio, is expected to blow in on August 1.

The Lebanon Valley Furnace, Lebanon, Pa., was blown in on April 18.

Thomas H. Hamilton, who was formerly engaged in the manufacture of iron and steel wire, has re-entered that field. A new mill has been built at Trenton and Allegheny avenues, on the line of the Pennsylvania Railroad, and the business will be transacted under the firm name of Hamilton & Co. The new mill is 75 x 100 feet and one story high. Most of the machinery is new and up to date, and will have a productive capacity of from 5 to 7 tons of iron and steel wire in various shapes and sizes per day. The new plant is expected to be in operation about May 20.

The Victoria Furnace, Goshen, Rockford County, Virginia, was blown out April 15.

The Shenango Furnace Company, Pittsburgh, W. P. Snyder, president, has secured possession of Mable Furnace at Sharpsville, Pa., which it bought some months ago. The stack is 15½ x 75 feet and has a capacity of about 250 tons of pig iron per day. This gives the Shenango Furnace Company a total of four stacks at Sharpsville and a daily output of about 1200 tons of pig iron, making it the largest independent producer of Bessemer and basic iron in the two valleys. The output of these four stacks is not controlled by the Bessemer Pig Iron Association.

Julian Kennedy, consulting engineer, Bessemer Building, Pittsburgh, is preparing plans for a 24-inch universal plate mill to be built by the Cambria Steel Company, at Johnstown, Pa. The mill will be adapted to roll high carbon plates and will be so designed that 48-inch plates can be rolled by lifting out the vertical rolls. In this way the mill serves the purpose of a 24-inch universal mill and a 48-inch plate mill.

The puddling plant of the Wilkes Rolling Mill Company, at Sharon, Pa., which has been idle for some time, started up on Monday, May 1. The plant contains six double puddling furnaces and two trains of sheet rolls, the output being muck bar and sheets.

Furnace "I" of the Edgar Thomson plant of the Carnegie Steel Company, at Bessemer, which has been idle for some time for repairs, was started up last week. The entire 11 stacks at Edgar Thomson are in blast.

Daily press reports to the effect that the Carnegie Steel Company would build 24 open hearth furnaces at the Edgar Thomson Steel Works for the purpose of rolling open hearth rails are officially denied. This project has not even been considered in any way.

The expected increase in wages at the Homestead Steel Works of the Carnegie Steel Company came last week, when the men

without any announcement from the concern found more money in their pay envelopes.

The report that Zug & Co., Limited, Pittsburgh, maker of bar iron and sheets, whose plant is located at Thirteenth and Etna streets, in that city, had sold its property to the Allegheny Valley Railroad is untrue. It is a fact that the concern gave an option on its plant four or five months ago to some parties, but nothing has yet been done with it.

## General Machinery.

The Crescent Machine & Tool Company, Indianapolis, Ind., recently incorporated its business in order to enlarge its facilities for taking care of its rapidly growing business. For the present the company will continue to occupy its quarters, where it has available about 6500 square feet and no material change is to be made in its products, which consist of gas and gasoline engines, air compressors, experimental machinery and tools. W. S. Van Buskirk is secretary.

H. L. Cook & Co., West Derby, Vt., have purchased the West Derby machine shop and will conduct a general machine shop business. A new planer has been installed and other new machinery will be added from time to time as conditions warrant.

The Crompton & Thayer Loom Works, Worcester, Mass., is to erect an addition affording 3600 square feet of additional floor space. The demand is for room to spread out in and for bench work.

J. H. Henderson, Rockland, Maine, has bought the machine shop in that town known as the Inventors' Exchange, and will conduct a general jobbing business and build experimental machinery. He is not yet decided what new machinery he will require.

Practically simultaneous orders have been received at the Washburn Shops of the Worcester Polytechnic Institute for seven drill grinders and a 14-inch sensitive drill from St. Petersburg and a drill grinder for immediate shipment to Japan.

The plant of the Driggs-Seabury Ordnance Corporation, Sharon, Pa., is about completed, consisting of a foundry building, 100 x 440 feet; forge shop, 109 x 160 feet; machine shop, 60 x 260 feet; power house, 40 x 180 feet, and shell building, 60 x 250 feet; all of steel frame construction. They were designed, manufactured and erected by Wm. B. Scaife & Sons Company, Pittsburgh, Pa.

The Belle-Charest Mfg. Company, Nashua, N. H., is a new corporation, which will occupy a building in that city formerly occupied as a churn factory. The company will manufacture a machine for making shoe counters, in addition to a leather manufacturing business.

The Lead Lined Pipe Company, Wakefield, Mass., is to erect an addition to its machine shop, 22 x 60 feet, besides some minor additions to other departments. The company is not yet ready to make a statement as to what will be required in the way of new machinery or other equipment.

Joseph D. Edelson has been appointed receiver for the Chilton Special Machine Company, New York.

## Power Plant Equipment.

Contract was awarded April 22 to Howard Burns, Lincoln, Neb., for furnishing and installing at the Nebraska Asylum for the Chronic Insane at Hastings, Neb., one 14 x 14 inch automatic engine direct connected to one 75-kw. electric generator, two 250 horse-power boilers and one boiler feed pump.

The Board of Infirmary Directors of Jefferson County, Ohio, will receive bids until May 9 for the erection and equipping of a power and boiler house for the county infirmary at Steubenville, Ohio. Fred W. Elliott, Board of Trade Building, Columbus, has prepared plans and specifications.

The Pekin Gas Heating & Mfg. Company, Pekin, Ill., has changed its name to the Pekin Engine & Machine Company.

The bulk of the equipment for the extensions to the power house of the Philadelphia Rapid Transit Company, Philadelphia, Pa., has been purchased, the turbo generators have been secured from the Westinghouse Machine Company, Pittsburgh. The company has awarded the contract for the construction of a \$100,000 wharf to Armstrong & Latta of Philadelphia. This wharf will be about 120 feet wide and 700 feet in length, extending in the Delaware River. The work will involve an expenditure of \$100,000.

The Herzog Art Furniture Company, Cleveland, Ohio, has recently ordered from the Allis-Chalmers Company one 100-kw. alternating current generator. With it will be installed an exciter, switchboard and several motors, ranging in size from 5 to 20 horse-power.

The Canadian Westinghouse Company, Limited, recently sold to the Edmonton (Alberta) Street Railway Company a 200-kw. railway generator and a number of double equipments of railway motors. Another recent sale made by the company was that of a 500-kw. inclosed type turbo generator unit to the Canadian Pacific Railway Company. This unit is to be installed at Fort William and to be used for supplying power to the various grain elevators at that point.

The Fitz Water Wheel Company, Hanover, Pa., has partly completed its new plant, which will consist of a main building,

60 x 120 feet; a building, 40 x 60 feet, and a smaller building, 26 x 36 feet. The new plant will be located on a site of 7000 square feet and will be connected with the Pennsylvania Railroad by a siding 250 feet long. The machinery has been secured. The special machinery, which will be built by the company, will be run by electricity. The company expects to move into the new plant by June 15. The product will be steel overshoot water wheels.

On account of the increasing demand for Diesel engines, which are built at the Providence works of the American & British Mfg. Company, it is probable that extensive additions will have to be made to present facilities within a very short time. As it is expected that the Wilkinson turbine will also be made at these shops it is very probable that additional buildings will have to be constructed to take care of this work. The plans for these proposed extensions have not yet taken more definite form than a mere outline.

Plans are being prepared by the engineering firm of Ford Bacon & Davis at their offices, 24 Broad street, New York, for an addition to the power plant of the Nashville Railway & Light Company. All plans and purchases for the plant extension equipment are being made in New York, and it is understood that the company is in the market for considerable power plant machinery.

The Wisconsin Light & Power Company, La Crosse, Wis., has placed orders with the Westinghouse Companies for the entire equipment of a large light and power plant. The order includes two 400-kw. alternating current generators, to be driven by Westinghouse-Parsons steam turbines; three Westinghouse vertical steam engines, one of which will be connected to a 25-kw. direct current generator; two motor generator sets, each consisting of a 7½-kw. direct current generator, and a 15 horse-power type C induction motor. Roney stokers, manufactured by the Westinghouse Machine Company, will be used in the boiler installation. The Westinghouse Company has received a number of orders recently for motors to be applied to cranes, hoists and machine tools. Among the orders placed were the following: Morgan Engineering Company, Alliance, Ohio, 8 railway type crane motors, with a total of 250 horse-power; Pond Machine Tool Company, Plainfield, N. J., 28 type C induction motors; Niles Tool Works, Cincinnati, Ohio, 5 type S direct current motors; Long & Allstatter Company, Hamilton, Ohio, 30 type S motors; Delaware, Lackawanna & Western Railway, 20 type C induction motors; United States Hoe & Tool Company, Columbus, Ohio, 8 type S motors; Austin Powder Company, 10 type C induction motors.

The Westinghouse Machine Company, East Pittsburgh, has received an order for a large turbine from the Everett Electric Company, Everett, Wash.

#### Foundries.

Louis Pitschner has purchased an interest in the Key City Iron Works, Dubuque, Iowa, formerly wholly owned and operated by Frank Zehetner.

The Sterling Emery Wheel Mfg. Company, Tiffin, Ohio, is having plans prepared for a foundry building and work on same will start as soon as George S. Tillotson returns from a European trip.

The first steel was poured at the large new plant of the Baldt Steel Casting Company, New Castle, Del., April 14.

The American Steel Foundries, New York, have just been awarded a contract by the Norfolk & Western Railway Company for body and truck bolsters for 4000 cars of different designs and capacities. These cars will be manufactured at the Roanoke shops of the railroad company, and by the various car builders. The bolsters for all of the cars will be made entirely of cast steel.

J. M. Craig, Hartford, Conn., is to erect a two-story foundry building, 30 x 50 feet, on Arch street, where he will continue his general foundry business, making brass, bronze, composition and phosphor bronze castings.

The Canton Stove Mfg. Company, recently formed at Canton, Ohio, is having plans prepared for a large stove factory and expects to commence operations in the early fall. Earl V. Coulson, formerly sales manager for A. J. Lindemann & Hoverson Company, Milwaukee, and before that with Cribben & Sexton Company, Chicago, is general manager of the new company.

#### Bridges and Buildings.

The Newton Engineering Company, Milwaukee, Wis., has been awarded the contract for the construction of a reinforced concrete bridge at Lake Park in that city. Contract price \$6246. The bridge will be of handsome design and will have a span of 118 feet. The entire bridge will be 216 feet long.

The Missouri Valley Bridge & Iron Company, Leavenworth, Kan., has closed a contract with the International & Great Northern Railroad to replace all bridges with heavy steel material between Palestine and San Antonio. The work will aggregate \$600,000.

The Decatur Bridge Company, Decatur, Ill., has about completed the additions to its plant and has the machinery on hand ready to set up. The equipment for these extensions purchased this spring includes one 36-inch throat Cleveland punch,

one 2-inch National upsetter, one 42-inch drill press, two 10 horse-power motors; from the Chicago Pneumatic Tool Company, Chicago, Ill., one long riveting hammer, one air chipping hammer and one drill and reamer.

John E. Day is to erect a brick factory building, 55 x 132 feet, on Eden street, Worcester, Mass., and will rent it for general manufacturing purposes.

The Fort Pitt Bridge Works recently secured an order for 1000 tons of structural steel, to be used in connection with the building of the new terminal of the Delaware, Lackawanna & Western Railroad at Hoboken, N. J.

The Hurley Estate, Lynn, Mass., is to erect a four-story brick block in that city, to be 50 x 80 feet, the upper stories to be rented for manufacturing purposes.

#### Fires.

The machine shops and foundry of C. Rittenhouse & Son, Norristown, Pa., were damaged \$35,000 by fire on April 25.

The boiler shops of the National Machine & Boiler Company, Cleveland, Ohio, was partially destroyed by fire last week. The loss is placed at \$5000.

Withington & Cooley's trip hammer shop in Jackson, Mich., was recently destroyed by fire. It is stated that all the machinery in the shop was destroyed.

The patent leather factory of Harry W. Clark, Woburn, Mass., was destroyed by fire April 27, loss \$13,000.

The plant of the Household Sewing Machine Company, at Providence, R. I., was damaged \$150,000 by fire on May 1.

The flour mills of the C. A. Gambrill Mfg. Company, at Orange Grove, about 10 miles from Baltimore, Md., were destroyed by fire on May 1. The loss is placed at about \$250,000.

To provide increased facilities for its business, the Phenix Tube Company, maker of iron line, brass and bronze tubes, Brooklyn, N. Y., has reincorporated with a capital stock of \$100,000, doubling its former capitalization.

The plant of the Fagan Iron Works, at Jersey City, N. J., was destroyed by fire on Tuesday night. The plant consisted of a foundry, storehouse and pattern shop, and the loss is reported to be more than \$60,000.

#### Hardware.

The Patton Paint Company, Milwaukee, Wis., will make large additions to its already extensive plant during the present summer, expending about \$100,000 for this purpose. Two new buildings will be erected, two stories high, of brick. One of the buildings will be used for making implement paint, the other, to the south of the main building, will serve as a box factory and label printing house. The Pittsburgh Glass Company has vacated the warehouse which it formerly occupied on the land of the Patton Company and this building has been converted into a paint drying and mixing department. The building has been equipped with vats and drying kilns for the making of colors and drying them. These improvements are now under way and will be completed within a few months.

The Indiana Anchor Fence Company, South Bend, Ind., is rushing work on its new factory. The foundations are in and the walls well under way. The building is 64 x 128 feet.

Newark Rivet Works, Newark, N. J., is making an extensive addition to its plant. On its completion the company will be in excellent position to meet the constantly growing demand for its product.

The Parish-Alford Fence & Machine Company has been incorporated at Knightstown, Ind., with \$50,000 capital stock by Wm. H. Alford, Edgar F. Hiatt and Wm. D. Williams.

The Atuo Fence Machine Company has been incorporated at Farmland, Ind., with \$50,000 capital stock, by H. F. Wood, John Nixon and Thos. W. Botkin.

The Cynthiana Quarries Company has been incorporated at Cynthiana, Ind., with \$25,000 capital stock, to develop large ing. secretary.

The Anderson Knife & Bar Company, Anderson, Ind., purposes doubling its capacity this summer. The plans for buildings and equipment have not yet been prepared.

Buildings are being completed at Owensboro, Ky., for the machinery of the New Castle Shovel Company, New Castle, Ind., the plant of which was closed down three years ago. A half interest in the plant has been sold to J. W. McCullough of Owensboro. Samuel Higginbotham of New Castle will go to the new location as manager.

The New Departure Mfg. Company, Bristol, Conn., is to erect a new building, 48 x 80 feet, and three stories, the new space to be devoted to increasing manufacturing facilities, which has been made necessary by the growth of the business.

E. R. Wagner Mfg. Company, North Milwaukee, Wis., manufacturer of vehicle hardware, sheet metal stampings and hardware specialties, is planning a large addition to its factory, the present facilities being inadequate for the volume of business which is coming into the company. The addition will be of strictly fire proof construction throughout.

Referring to the recent fire in its plant the Granite State Mowing Machine Company, Hinsdale, N. H., state that the



machinery, although damaged by water, was not ruined, as the fire was confined entirely to the upper floors of the factory. The building, however, suffered severely from water damage. It is the intention of the company to enlarge the building when repairing it, by putting on an extra story with a flat roof, instead of the pitch roof, as formerly. This will give much needed extra capacity. When the extensive repairs are completed the plant will be much more convenient and satisfactory than heretofore.

F. E. Myers & Bro., Ashland, Ohio, manufacturers of pumps, hay tools, &c., refer to trade conditions as decidedly gratifying. The demand taxes their increased capacity to the extent of requiring night runs up to 9 o'clock, and this, despite the fact that the plant has been run full force and full time since August 1 of last year.

Sunderland Mfg. Company, recently organized with a capital of \$25,000, will establish a plant at Tilton, N. H. The company's product will include brass furnishings for upholsterers, gas and electric light fixtures, small brass parts for automobiles, &c. B. S. Cotes of Tilton is president of the company.

The G. Drouvé Company, Bridgeport, Conn., reports the receipt of a contract from the Pennsylvania Railroad to equip the shops at South Altoona, Pa., with the Lovell window operating device. The company has also recently received an order to equip the shops of the Delaware, Lackawanna & Western Railroad, at Kingsland, with the same device.

The Bruner Steel Wagon Company, Wapakoneta, Ohio, has commenced the manufacture of all cold pressed steel wagons for farm and road uses.

The American Wringer Company, 99 Chambers street, New York, has decided to close its factory at Auburn, N. Y., and concentrate the business at Woonsocket, R. I. This means that the Woonsocket plant will be enlarged. The best of the machinery at Auburn will be moved, and it will be supplemented by whatever modern machines will be necessary to bring the Woonsocket factory up to the required capacity to take care of the business of both plants.

The Gloria Sweeper Company has been incorporated at Saginaw, Mich., to manufacture carpet sweepers. The officers of the company are James K. Griggs, president; Charles L. Grube, treasurer, and Alex. E. Lyon, secretary and manager. The company will establish its factory in the building formerly occupied by the Saginaw Carriage Company. The Sweepers will be manufactured under the Reynolds patents.

Siemon & Elting, 104 Front street, New York, manufacturers of Shapley's patent marine glue, advise us that this article is steadily growing in favor among American boat builders. It is also being quite largely used by the Government on its vessels.

P. E. Somers, tack manufacturer, Worcester, Mass., is to erect a new factory. The building will be of brick, 36 x 141 feet, and three stories. A new 80 horse-power Harris-Corliss engine, built by the William A. Corliss Engine Company, Providence, R. I., and a 100 horse-power boiler, built by the Stewart Boiler Works, Worcester, will be installed. No new machinery will be required at the outset of the inhabitation of the new factory, but new shafting and other mill equipment will be needed.

#### Miscellaneous.

The George Cutter Company has been organized at South Bend, Ind., with \$10,000 capital stock, for the manufacture of electrical supplies and specialties. The directors are George Cutter, I. M. Cutter and Albert Schelble.

The American Voting Machine Company has been organized at Shelbyville, Ind., with Dr. T. C. Kennedy, president; Dr. Samuel Kennedy, secretary-treasurer, and Enos Porter, general manager. A plant is yet to be obtained.

The New Jersey Beck Electric Lighting Company, 830 Broad street, Newark, N. J., has incorporated with a capital stock of \$125,000 for the manufacture of an automatic arc lamp. The company is now exhibiting its lamps at 311-313 Plane street.

The Southern Railway Company has let a contract for the construction of a tunnel through Lookout Mountain, to W. J. Oliver, Knoxville, Tenn. The tunnel will be about 3500 feet long and will cost about \$150,000.

The Sunderman Machine Company, New York, was recently incorporated for the manufacture of automatic machinery for weighing, wrapping and sealing packages of merchandise. The first machines the company will introduce will be for taking cartons flat, opening them up, sealing the bottom, weighing, filling and sealing the top, all in one operation. Theodore W. Church of the Nevins-Church Press, Royal Building, New York, is interested.

The J. Thompson & Sons Mfg. Company, manufacturer of agricultural implements, will rebuild its machine shop at South Beloit, Wis., recently destroyed by fire. The new building will be larger and better equipped than the old one. A meeting of the stockholders of the company is to be held May 3 for the purpose of increasing the capitalization to \$500,000.

The Timken Roller Bearing Axle Company, 219 West Forty-sixth street, New York, has incorporated to handle the product

of the Timken Roller Bearing Axle Company of Canton, Ohio, on a large scale through the East. The company will carry a large stock at its New York store. The directors are L. M. Preston, H. R. Roux, Edward R. Hewitt, Leonard Gray, W. R. Timker.

The Driggs-Seabury Ordnance Corporation, Sharon, Pa., has secured a proving ground near the State line, Ohio, where rapid firing guns will be tested.

The Reeves Pulley Company of Columbus, Ind., has begun the manufacture of automobiles.

The Lafayette Electrical Mfg. Company has been incorporated at Lafayette, Ind., with \$35,000 capital stock, by Thomas Duncan, Robert L. Jaques and Edward F. Bohrer.

The American Meter Company, New York, has increased its capital stock from \$3,000,000 to \$6,000,000.

The Challenge Company, successor to the Challenge Wind Mill & Feed Mill Company, Batavia, Ill., is having plans prepared for a new factory building, 80 x 220 feet, two stories high, and contracts will soon be let for its erection. No machinery will be required, as the equipment will be transferred from an old building.

The American Graphite Company has been incorporated at South Bend, Ind., with \$300,000 capital stock by Adam Hunsberger, William Clem, H. S. La Grange, Samuel J. Krueger and George M. Moon.

Plans have not yet been prepared by the Buffalo Dry Dock Company, Buffalo, N. Y., for rebuilding the part of its plant which was recently damaged by fire.

The Walter A. Zelnicker Supply Company, dealer in railway, mill and factory supplies and heavy hardware, St. Louis, Mo., announces that at its East St. Louis yards it is now remodeling and rebuilding railroad equipment of all kinds and is also building new cars.

The Globe Mfg. Company, Painesville, Ohio, has recently taken up the manufacture of automatic liquid measures. The company has recently moved into new quarters, embracing about 75,000 square feet of floor space, and is installing a drill press, grinders, iron turning lathes, buffing lathes, as well as special machinery.

The Dundee Silica Sand Company, Massillon, Ohio, has been sold by Walter H. Allman to Cincinnati people, who will take over the plant about May 1. Those at the head of the new company are D. C. Cable, Nelsonville; C. B. Ellis, E. G. Kinkead of Cincinnati, and D. S. Gardner of Massillon. The company has increased its capital stock to \$150,000, and has contracted with the Ruggles-Cole Engineering Company, Chicago, for a 50-ton per hour dryer. The company will manufacture silica brick linings for steel furnaces.

Meacham & Wright, Chicago, were awarded contract by the South Park Commissioners, Chicago, to furnish 2000 barrels of Portland cement, and the Knickerbocker Ice Company received contract for supplying 1000 barrels of natural or Rosedale cement.

The Huber-Hodgman Printing Press Company, Taunton, Mass., is to build at once a brick building, 60 x 300 feet, and one story. The building will be used principally for erecting and storage, and the company states that no new machinery will be required.

The Bausch, Lomb, Saegmuller Company, Rochester, N. Y., has been organized for the manufacturing of engineering, astronomical, physical and other instruments of precision. The plant of the company will be located in the new addition to the Bausch & Lomb factory, and the Bausch & Lomb Optical Company will act as sales agents for the new company. The business has been carried on for a number of years in Washington, D. C., by Geo. N. Saegmuller and the plant is now being transferred from Washington to the new location in Rochester.

Official announcement has been made of the consolidation of the General Incandescent Arc Light Company and the Stanley Electric Mfg. Company. The officers are: Wm. Murray Crane, president; C. C. Chesney, first vice-president; M. D. Barr, second vice-president; M. J. Insull, third vice-president.

The General Fireproofing Company of Youngstown, Ohio, has secured the contract for the fire proofing work in the Kenesaw apartment house of Washington, D. C., which will require about 300,000 square feet of expanded steel lathing. Also a contract for a large amount of steel furniture for the Chicago Post Office and a further contract for steel shelving and file boxes for the new bank building of the American Security & Trust Company, in Washington, D. C.

The Struthers Coal & Coke Company, Cleveland, Ohio, has been organized by interests connected with the Struthers Furnace Company, Struthers, Ohio, to develop coal and coke property recently purchased. The company has 242 acres in the Connelville region, near New Salem, Pa., and will let contracts in a few days for the building of 160 ovens. The contracts for sinking shafts have been awarded. Fifty houses for employees will be built. The 160 ovens will furnish coke for the Struthers furnace, but it is expected that more ovens will be built later.

## The Iron and Metal Trades

Consumption of Iron and Steel continues at an unprecedented rate. Reports from manufacturers in every branch show that the trade is still at high pressure in making deliveries. An indication of what is now being done is given by the United States Steel Corporation. This corporation has a total of 91 blast furnaces, and of these only two furnaces, used for making Pig Iron, are now not in operation. Ordinarily 10 per cent. of this capacity should be laid off for repairs, and therefore this condition of activity is far better than is to be expected. Preparations were made last year for just such a campaign as this by putting all the corporation's furnaces in good shape, and it is now reaping the benefit of its excellent management. It may be seen from this state of affairs that with the crowded condition of its finishing departments if accidents should happen at any of its furnaces the corporation would immediately be in the market to purchase additional supplies of Pig Iron.

The demand for Steel Billets is still so strong that premiums continue to be quoted above the official price. A sale of 10,000 tons of Billets was made this week by a Pittsburgh company to an Eastern Steel plant at the going premium to meet a deficiency in its own supply.

The Structural trade is coming to the front with an increased activity. The American Bridge Company reached its expected total of 70,000 tons of new orders in April and reports a very large amount of new business in sight. Building trades are coming up to expectations of seasonable activity and a great deal of material will be required in that direction, as well as for railroad and highway bridges. The reports from this branch indicate that before the summer has far advanced trouble will be experienced in securing deliveries by belated buyers.

While the Steel trade and closely related branches of the Iron trade are thus in strong condition, the Foundry Pig Iron trade is somewhat easier but cannot be considered weak. The merchant furnaces have booked heavily for future delivery, and the demand is now comparatively light. Nevertheless, the market is far from stagnant. Commission merchants report a daily run of business in fair volume.

The flurry in Wall Street during the past week had possibly some effect on the sentiment of many consumers, as liquidation in securities was for a time so severe as to cause apprehension of financial troubles. If the decline in securities had continued general business would unquestionably have been affected. This adverse influence, however, appears to have safely passed.

Bar Iron is lower in Chicago as a result of the recent heavy reduction in prices of Scrap Iron. The price of Bar Iron has been completely out of line with Steel Bars and the Bar Iron manufacturers are anxious to reduce their costs and their selling price so as to be able to secure their share of the Bar trade.

Old Material is again lower in all the important consuming centers.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

May 3, Apr. 26, Apr. 5, May 4,  
1905. 1905. 1905. 1904.

### PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia .....	\$17.75	\$17.75	\$17.50	\$15.00
Foundry Pig No. 2, Southern, Cincinnati .....	16.00	16.25	16.25	12.50
Foundry Pig No. 2, Local, Chicago .....	17.25	17.25	17.25	14.00
Bessemer Pig, Pittsburgh .....	16.35	16.35	16.35	13.85
Gray Forge, Pittsburgh .....	15.60	15.60	16.00	12.50
Lake Superior Charcoal, Chicago .....	18.50	18.50	18.50	15.00

### BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh .....	24.00	24.00	24.00	23.00
Steel Forging Billets, Pittsburgh .....	27.00	27.00	27.00	....
Steel Billets, Philadelphia .....	28.00	28.00	28.00	25.00
Steel Billets, Chicago .....	28.00	28.00	28.00	24.00
Wire Rods, Pittsburgh .....	34.00	34.00	34.00	30.50
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago .....	13.75	14.00	15.25	11.00
O. Steel Rails, Philadelphia .....	16.75	18.00	18.00	13.00
O. Iron Rails, Chicago .....	19.00	19.50	20.00	17.00
O. Iron Rails, Philadelphia .....	22.50	24.00	25.00	17.25
O. Car Wheels, Chicago .....	14.50	15.00	16.00	14.00
O. Car Wheels, Philadelphia .....	16.00	17.00	17.00	12.00
Heavy Steel Scrap, Pittsburgh .....	16.00	16.00	16.00	13.00
Heavy Steel Scrap, Chicago .....	13.25	13.50	14.75	10.00

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia .....	1.73½	1.73½	1.73½	1.48½
Common Iron Bars, Chicago .....	1.55	1.60	1.60	1.45
Common Iron Bars, Pittsburgh .....	1.60	1.60	1.65	1.35
Steel Bars, Tidewater .....	1.64½	1.64½	1.64½	1.49½
Steel Bars, Pittsburgh .....	1.50	1.50	1.50	1.35
Tank Plates, Tidewater .....	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh .....	1.60	1.60	1.60	1.60
Beams, Tidewater .....	1.74½	1.74½	1.74½	1.74½
Beams, Pittsburgh .....	1.60	1.60	1.60	1.60
Angles, Tidewater .....	1.74½	1.74½	1.74½	1.74½
Angles, Pittsburgh .....	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh .....	1.60	1.65	1.65	1.35
Skelp, Sheared Steel, Pittsburgh .....	1.65	1.70	1.70	1.35
Sheets, No. 27, Pittsburgh .....	2.30	2.30	2.30	2.10
Barb Wire, Pittsburgh .....	2.25	2.25	2.25	2.50
Wire Nails, Pittsburgh .....	1.80	1.80	1.80	1.90
Cut Nails, Pittsburgh .....	1.80	1.80	1.80	1.75

### METALS:

Copper, New York .....	15.00	15.00	15.25	13.37½
Spelter, St. Louis .....	5.62½	5.75	5.75	5.00
Lead, New York .....	4.50	4.50	4.50	4.50
Lead, St. Louis .....	4.50	4.50	4.47½	4.40
Tin, New York .....	30.00	30.20	30.20	27.95
Antimony, Hallett, New York .....	8.50	8.50	8.25	7.25
Nickel, New York .....	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	3.74	3.74	3.74	3.64

## Chicago.

FISHER BUILDING, May 3, 1905.—(By Telegraph.)

Business in general is extremely quiet, both for current orders and for new contracts for the second half of the year in Pig Iron as well as finished products. Specifications, however, are excellent, buyers showing a disposition to take advantage of profits shown in their contracts by specifying for everything up to the extreme limit, even though it is necessary to find outside purchasers for surplus tonnage above what they will require themselves. Pig Iron is particularly quiet, business having been almost at a standstill, with most of the furnace representatives here for several weeks. It is true there is an inquiry for 5000 tons of Malleable in the market, but this is taken to be a feeler rather than a proposition that will be closed immediately. Foundry Irons are weak and Malleable is strong, as the ordinary jobbing foundry has a surplus of Iron either in stock or on contract, while the Malleable casting makers have received a business far in excess of their anticipation and are entering the market for new and unexpected tonnages. Forty-six hundred tons of 60-lb. Rails were placed with the leading Pittsburgh interest through the Chicago office, but outside of that Rails have been quiet. The demand for Light Rails and for Track Supplies is stated to be unusually good in the West, and the leading Western producer is already practically out of the market on Track Bolts. In Structural Steel there is a growing scarcity, particularly in sections from 3½ to 8 inches in both standard and special weights. The Plate situation is unchanged, with most of the mills from three to six months behind their orders. Rivalry between the leading producer and the large local independent has held the actual price of Soft Steel Bars down considerably below the official prices, and as a result Bar Iron makers have been forced to stay



out of the market long enough until they could buy their Scrap at a price which would permit them to offer Iron Bars in competition with a 1.35c. to 1.40c., Pittsburgh, basis on Steel. This is now being accomplished. Sheets are in large demand, and one by one the small independent mills that can only do business when the larger producers are crowded are becoming factors in supplying current demands. They are doing this in spite of very high prices which they have to pay for Sheet Bars, premiums ranging from \$3 to \$5 a ton above the official basis. Specifications on Merchant Steel are good, but new business is light thus far, though buyers are beginning to feel the market for contracts for the second half of this year and the first of next. The demand for Pipe and Boiler Tubes is reported excellent, particularly in Boiler Tubes in which the mills of the leading producer are apparently falling farther and farther behind their orders. Cast Iron Pipe makers are busy, and are receiving good prices for their product. Old Iron and Steel of every description has suffered another serious break in price, and there is a feeling that the downward tendency will continue a little longer, until prices are such that Bar Iron mills can buy liberally. Metals are unchanged, with the exception of Copper, which is weaker. Coke is weak as ever, with the supply apparently considerably exceeding the demand, particularly in Foundry grades. There is nothing new to report in wire products.

**Pig Iron.**—Outside of an inquiry for 5000 tons of Malleable Bessemer the market is at a standstill, and trading is quieter than it has been for a long time. In a general way March was one of the largest months in the history of most Chicago Pig Iron interests and April one of the poorest, and the inactivity of April is extending into the present month. This is accounted for by the fact that most purchasers are covered for the first half of the year, and are disposed to delay placing orders for the second half until the last moment in the hope that prices may break. Rumors are plentiful of price concessions, and the recent purchases of the International Harvester Company instead of having a strengthening effect on the market as was hoped have had the result of inducing smaller buyers to hold off in the hope of receiving the same concessions in price whatever they were that were granted to the Harvester Company. While Southern Iron is still officially quoted on the \$13.50 basis, buyers state that if they chose to do so they could close for the second half at 50c. lower. This contention, however, is vigorously combated by selling interests. Prices are stationary, officially at least, and we repeat last week's quotations as follows:

Lake Superior Charcoal.....	\$18.50 to \$19.00
Northern Coke Foundry, No. 1.....	17.75 to 18.00
Northern Coke Foundry, No. 2.....	17.25 to 17.50
Northern Coke Foundry, No. 3.....	16.75 to 17.00
Northern Scotch, No. 1.....	18.00
Ohio Strong Softeners, No. 1.....	18.80 to 19.30
Ohio Strong Softeners, No. 2.....	18.30 to 18.80
Southern Silvery, 4 to 6 per cent. Silicon	18.65 to 19.65
Southern Coke, No. 1.....	17.65 to 17.90
Southern Coke, No. 2.....	17.15 to 17.40
Southern Coke, No. 3.....	16.65 to 16.90
Southern Coke, No. 4.....	16.40 to 16.65
Southern Coke, No. 1 Soft.....	17.65 to 17.90
Southern Coke, No. 2 Soft.....	17.15 to 17.40
Southern Gray Forge.....	16.60 to 16.75
Southern Mottled and White.....	15.90 to 16.15
Malleable Bessemer.....	17.50
Standard Bessemer.....	18.80 to 19.80
Jackson Co. and Ky. Silvery, 6 % Silicon	21.30
Jackson Co. and Ky. Silvery, 7 % Silicon	21.30
Jackson Co. and Ky. Silvery, 8 % Silicon	22.30
Jackson Co. and Ky. Silvery, 10 % Silicon	23.30
Alabama Basic.....	17.65
Virginia Basic.....	17.65

**Billets.**—Forge Billets are sold in car lots and greater, Chicago, at from \$30 to \$32 in gross ton for base sizes, with the usual extras for smaller and larger sizes. Bessemer Rolling Billets should a demand rise would be quoted at about \$2 below the price for Forging Billets. An inquiry for 3000 tons of Sheet Bars developed prices of from \$29 to \$30, Chicago base, for Open Hearth, but as far as can be learned the order was not placed, as these figures were considered prohibitive by the prospective buyers in terms of present Sheet prices. There is no relief in the scarcity of Billets, and the situation seems to be growing worse rather than better.

**Rails and Track Supplies.**—An order for about 4500 tons of 60-lb. Steel Rails for an Oklahoma road, in addition to the one placed last week, went to the leading Pittsburgh interest. Outside of this Rail buying has been light. Prices on Light Section Rails averaged about 30c. higher at the mill for the leading producer for the month of April than the prices for the month previous, and indications are that the same relative increase will be recorded for the present month. Prices officially, however, have not advanced. We repeat last week's quotations, as follows: Standard Section Rails, \$28 per gross ton at maker's mill in 500-ton lots or greater, plus full freight to destination; Light Section Rails, \$24 to \$27 per gross ton, according to weight and tonnage; Angle Bars, 1.40c. to 1.50c.; Spikes, 1.75c. to 1.85c., f.o.b. Joliet, in car lots; Track Bolts, 2.40c. to 2.50c., base, with Square Nuts, and 10c. to 15c. higher for Hexagon Nuts. Store prices on Track Supplies range from 15c. to 25c. per 100 lbs. above car lot mill prices.

**Structural Material.**—There is a very pronounced

shortage on Structural Shapes from 3½ to 8 inches in section, and warehouse men are finding no difficulty in securing from 2.10c. to 2.25c. for such material out of stock. In fact, they could secure still higher prices if they choose to ask them. The large mills rolling Structural Shapes are confining themselves as much as possible to Heavy Sections because they can show the largest tonnage thereby. Official prices for delivery from mill, f.o.b. Chicago, in car lots, are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.76½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.76½c.; Angles, larger than 6 inches on one or both legs, 1.86½c.; Beams, larger than 15 inches, 1.86½c.; Zees, 3 inches and over, 1.76½c.; Tees, 3 inches and over, 1.81½c., in addition to the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices for either random lengths or cut to lengths on Angles, Beams and Channels, base sizes, range from 2.25c. to 2.50c., with the usual extras for size.

**Plates.**—Western mills and, for that matter, mills in the Pittsburgh district are several months behind their orders, and such mills as are still able to make prompt deliveries are able to collect premiums for such service, one eastern Pennsylvania mill at least asking and in many cases securing 2c. instead of 1.76½c., Chicago, for quick shipments. Official prices are unchanged as follows: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Sheared and Universal Mill Plates, Tank quality, 6¼ to 14 inches, inclusive, 10c. below these prices; Flange quality in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange quality, 25c. extra.

**Sheets.**—In spite of the very large tonnage of Sheets that is being consumed by the trade in Chicago and the West prices are not firmly maintained, owing to the liberality of the leading producer in covering consumers with blanket contracts last fall when prices were 40c. lower than now on Black and 75c. lower on Galvanized Sheets. Galvanized Sheets are more firmly held than Black, owing to the fact that mills producing the popular brands of Galvanized are much in arrears in their orders. Some relief is looked for in Galvanized when the local Sheet mill has its galvanizing plant completely installed, which will be two or three weeks from now. Official quotations in car lots, Chicago, for base sizes are as follows: Blue Annealed Sheets, Nos. 9 and 10, 1.91½c.; Box Annealed Sheets, Nos. 18 and 20, 2.31½c.; do., No. 27, 2.47½c.; do., No. 28, 2.56½c., with the customary differentials between gauges. Store prices are based on a minimum of 2.10c. for No. 10 Blue Annealed, 2.55c. for Nos. 18 and 20 Box Annealed, 2.70c. for No. 27 Box Annealed and 2.80c. for No. 28 Box Annealed. Galvanized Sheets are officially quoted at the following minimum prices at Chicago, in car lots from mill, base sizes: No. 10, 2.51½c.; Nos. 18 and 20, 2.86½c.; No. 27, 3.41½c.; No. 28, 3.61½c. Some mills ask 5c. and 10c. higher. Minimum store prices on Galvanized, base widths, are: Nos. 10, 12 and 14, 3.10c.; Nos. 22 and 24, 3.25c.; No. 27, 3.70c.; No. 28, 3.95c., with the usual differentials between gauges and extras for widths and lengths.

**Bars.**—Owing to the great falling off in the prices of Scrap Iron which have been made during the last three or four weeks, Iron Bars have witnessed a radical reduction in price, present figures ranging from 1.55c. to 1.60c., base, half extras, car lots, Chicago. Even at this price the market is by no means strong, and there is an evident determination on the part of the Bar Iron mills to get down as soon as possible to a basis where they can compete with the actual rather than the official price of Steel Bars. One disturbing factor in the market is the low prices quoted by the International Harvester Company on Steel Bars and Shapes for such tonnage in such sizes as it sees fit to roll in connection with its own requirements. There is a persistent rumor that Hoops will be advanced shortly, possibly \$2 a ton, in order to bring several important gauges of Hoops above rather than below the Band prices. Soft Steel Bars are unchanged officially at 1.50c., Pittsburgh, or 1.66½c., Chicago, in car lots, with half extras named on the Steel card. Iron Bars are unchanged but weak at 1.60c. to 1.65c., base, in car lots, Chicago. Soft Steel Angles and other Shapes in the Bar class are firm at 1.76½c., half extras, in car lots. Hard Steel Bars, Angles and Shapes rolled from Old Rails are quoted at about \$2 a ton below the same goods in Soft Steel. Hoops are firm at their new price of 1.81½c., base, full extras, Chicago. In store prices Steel Bars and Bands are being held at a minimum of 1.85c., base, half extras; Steel Angles and Shapes, 1.95c., half extras, and Soft Steel Hoops, 2.20c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

**Merchant Steel.**—The time is approaching when the large implement makers will enter into contracts for their requirements between July, 1905, and July, 1906, and until this contracting movement has fully set in it will be difficult to forecast prices for the coming season. The present programme is a strong one from the mill standpoint, and there is little disposition to make concession in order to secure the early closing of these large annual contracts. Prices are firm, as follows: Smooth Finished Machinery Steel, 1.91½c.; Smooth Finished Tire, 1.86½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.23½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount in car lots and 45 per cent. in less than car lots in base territory.

**Merchant Pipe.**—The recent advance of \$1 a ton in Merchant Pipe has strengthened the hands of the jobbers who are carrying stocks and has improved the tone of the Pipe market quite perceptibly. While there always are mills that are disposed to shade prices by giving an extra 5 per cent. discount on such a matter, this price cutting is reduced to the minimum at the present time owing to the fact that consumptive demand is very close to the maximum producing capacity. Official discounts on base sizes, ¾ to 6 inches, f.o.b. Chicago, in car lots, are as follows: Black Steel, 73.35; Galvanized Steel, 63.35; Black Iron, 71.85; Galvanized Iron, 61.85, with the customary differentials for larger and smaller diameters and for X and XX strong.

**Boiler Tubes.**—The advance in the price made last week, instead of being \$8 a ton as reported, was \$4 a ton, or two points reduction in discount. Base sizes, ¾ to 5 inches, were correctly reported 60.35 per cent. in car lots for Steel, but for Iron should have been 49.35 per cent. Seamless Steel Boiler Tubes are unchanged at 52.85 per cent. Larger and smaller diameters take the usual extras in price, and less than car lots are quoted at two points less discount. Store prices at Chicago are unchanged and business is reported to be heavy, the greatly delayed deliveries of mills resulting in increased business. We quote from store:

	Steel.	Iron.	Seamless.
1 to 1½ inches.....	40	35	42½
1½ to 2¼ inches.....	50	35	30
2½ inches.....	52½	35	37½
2½ to 5 inches.....	60	47½	42½
6 inches and larger.....	50	35	..

**Cast Iron Pipe.**—The city of Duluth placed with the leading producer an order for 1500 tons of Water Pipe and Seattle gave an order to the same interest for about 1000 tons. Manistique, Mich., is in the market for about 7 miles of water mains. Pipe mills generally are busy and the success of municipalities in disposing of their bonds following the authorization of April elections has led to a satisfactory activity in this market. Prices on ordinary lots are unchanged, as follows: \$29 a gross ton for 4-inch Pipe and \$28 for 6-inch and larger, with \$1 a ton higher for Gas Pipe.

**Old Materials.**—Prices have broken again radically and the tendency is still downward. The Chicago & Northwestern and the Chicago, Milwaukee & St. Paul both issued fairly large lists, and the prices received by them were disappointing as compared with prices secured a month earlier. Makers of Bar Iron because of lack of demand for their product, owing to its necessarily high price as compared with Steel, have refrained from buying Scrap Iron, and their insistence on staying out of the Scrap market has resulted in the very strong downward tendency of the last two or three weeks. The sentiment prevails that when prices reach a level, about \$1 a ton lower than they are to-day, the Iron Bar mills will begin buying heavily, because they will then see a possibility of turning Scrap into Bars at a price that will permit them to do a large business. The natural result of this buying movement, when it comes, will be to strengthen the Scrap market and to prevent further reductions in prices. Even under the present weakness of the market there is no disposition on the part of dealers to become panic stricken and to sacrifice their stocks, as those who have sufficient financial strength to do so are content to hold their stocks for higher prices. In the following list of prices the lower figures as a rule represent prices at which dealers buy from railroads and the higher prices at which they will sell to consumers in large lots in the lines named. We quote:

Old Iron Rails.....	\$19.00 to \$19.50
Old Steel Rails, 4 feet and over.....	14.75 to 15.25
Old Steel Rails, less than 4 feet.....	13.75 to 14.25
Heavy Relaying Rails, subject to inspection.....	22.25 to 22.75
Heavy Relaying Rails, for side tracks.....	19.50 to 20.00
Old Car Wheels.....	14.50 to 15.00
Heavy Melting Steel Scrap.....	13.25 to 13.75
Frogs, Switches and Guards.....	13.25 to 13.75
Mixed Steel.....	11.00 to 11.50

The following quotations are per net ton:

Iron Fish Plates.....	\$16.00 to \$16.25
Iron Car Axles.....	21.00 to 21.50
Steel Car Axles.....	16.00 to 16.50
No. 1 Railroad Wrought.....	15.25 to 15.75
No. 2 Railroad Wrought.....	13.25 to 13.50
Shafting.....	15.00 to 15.50
No. 1 Dealers' Forge.....	11.50 to 11.75

Wrought Pipes and Flues.....	\$9.75 to \$10.25
No. 1 Cut Bushing.....	9.25 to 9.50
Iron Axle Turnings.....	10.00 to 10.50
Soft Steel Axle Turnings.....	9.75 to 10.25
Machine Shop Turnings.....	9.25 to 9.50
Cast Borings.....	7.25 to 7.75
Mixed Borings, &c.....	7.25 to 7.75
No. 1 Mill.....	9.00 to 9.25
Country Sheet.....	7.00 to 7.50
No. 1 Boilers, cut to Sheets and Rings.....	9.25 to 9.50
No. 1 Cast Scrap.....	12.50 to 13.00
Stove Plate and Light Cast Scrap.....	9.00 to 9.50
Railroad Malleable.....	12.50 to 13.00
Agricultural Malleable.....	11.50 to 12.00

**Metals.**—Copper has suffered another reduction of ¼c. and is none too strong at that. Lead is scarce and prices are strong. We quote as follows: Copper is held at 14½c. to 15c. for Casting and 15½c. to 15¾c. for Lake, in car lots, with ¼c. to ½c. higher for small lots. Lead is quoted in 50-ton lots at 4.55c., in car lots at 4.60c. and 5c. to 5.25c. in small lots; Pig Tin at 31¼c. to 31¾c. in car lots and 32c. to 32½c. in less than car lots. Spelter is in slow demand, the car lot price being 6c. and the small lot price 6¼c. Sheet Zinc is held at \$7.50, base, La Salle, equivalent, after deducting discounts, to \$7.25, Chicago, for car lots of 600-lb. casks, with small lots selling at \$7.50 to \$8. Prices of Old Copper and Brass are as follows: Copper Wire, 13¼c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12¾c.; Red Brass, 11¾c.; Red Brass Borings, 9¾c.; Yellow Brass, Heavy, 8½c.; Yellow Brass Borings, 7¾c.; Light Brass, 7c.; Lead Pipe, 4¼c.; Tea Lead, 3.85c.; Zinc, 4.35c.; Pewter, No. 1, 19¼c.; Block Tin Pipe, 25c.

**Coke.**—Business is extremely quiet and prices weak for spot business particularly. At the same time there is very little disposition on the part of producers to make concessions on contracts covering the last half of the year, Connells-ville interests holding quite firmly at \$2.75 to \$3 at the oven for 72-hour Foundry Coke and about 50c. less for Furnace, or \$5.40 to \$5.65, Chicago, for Foundry and \$4.90 to \$5.15 for Furnace quality. Wise County, Va., interests, which enjoy the low freight rate of the Louisville & Nashville road, are asking \$5.25 to \$5.40, Chicago, or an equivalent of \$3 to \$3.15 at the ovens for Foundry quality. It is hard to say what prices a large inquiry would bring forth.

## Cleveland.

CLEVELAND, OHIO, May 2, 1905.

**Iron Ore.**—The lake season is opening up rather slowly. The demand for Ore is fairly good, but not urgent. On the other hand the season seems to have opened before the shippers were ready for it. The movement is rather slow in consequence, being complicated by the fact that the weather is still cold and the Ore is frozen in the pockets. The boats are also being held up for divers reasons, one of them being that the movement of the docks at the lower lake ports is slow and the supply of cars is not all that could be desired. There is a disposition on the part of the railroads to keep a pretty close watch on their car supply, and this surveillance often results in a shortage of cars upon which to unload the Ore quickly when the boats are at the docks. These combining work for a slow movement of the material down the lakes. The rates of transportation have not changed. Wild rates range about even with the contract charges at 75c. from Duluth to Ohio ports, 70c. from Marquette and 60c. from Escanaba. There is not much being done in the way of buying Ore. Most of those who intend to buy this early in the season have covered their immediate wants and will prefer to wait for developments after July 1 before committing themselves further. Prices, however, hold about as they have been at \$3.75 for Bessemer Old Range, \$3.50 for Bessemer Mesaba, \$3.25 for non-Bessemer Old Range and \$3 for non-Bessemer Mesaba, f.o.b. Lake Erie ports.

**Pig Iron.**—The Foundry situation is easier, but not weak. The market seems to hold about as steady as it has been. Practically all of the buying there is at present time is for spot delivery, although some sales have been made recently for the last half of the year. Most of the furnaces have withdrawn their traveling men from the road and are waiting for some development in the situation. Many of them are well sold up for the immediate future and are not anxious for new business. The others are not willing to try to force their Iron upon buyers who are not seeking to cover their needs. Such a procedure would, they fear, be construed as a confession of weakness of the market, an impression none wishes to convey. There are a few instances where furnaces are willing to sell under the market, but for the most part the sales have been made at \$16 for No. 2 in the Valley either for spot or future delivery. On spot shipments the market seems to be the weakest. There is a little selling of Southern Foundry here at \$13.50, Birmingham, for No. 2. There is a good demand for both Bessemer and Basic. It is understood that the Steel Corporation has some inquiries in for Bessemer Iron during May to be bought of the Bessemer Association. The prices are holding at \$15.50 at the furnace as a basis. There is some good buying of Basic for both immediate shipment and for future de-



livery. In one or two instances the price has been a little weak, being shaded a few cents, but generally the market is strong at \$15.50 in the Valley. The Coke market is weak due to the fact that some of the ovens have an accumulation which they are willing to sacrifice in order to get the material moving. The best grades of 72-hour Furnace Coke are selling at \$2.70 to \$2.80 at the oven, while the best Furnace Coke is selling at \$2.25 to \$2.40. One or two ovens are willing to sell Foundry Coke as low as \$2.50 at the oven, but they are the exception.

**Finished Iron and Steel.**—While the buyers of Finished Material are still specifying heavily against their former contracts most of them are waiting before taking on any fresh supplies of material. In the way of inquiries for new business therefore the market is dull at the present time, this situation appertaining to all branches of the market in the Cleveland district. The best part of the market seems to be the Structural and Plate trades. The specifications have been heavy, and in many instances buyers rushed for material have been taking liberally of the jobbers, paying large premiums for what they obtain. At the same time it is apparent that new orders of any size are not coming in very rapidly, a condition which may be due to the known crowded condition of the mills and the inability to get a general specification inside of several weeks. Prices hold as they have been at 1.60c., Pittsburgh. In Bar Steel there has been some fair buying for delivery up to July 1, but not much has been done beyond that time. Many of the consumers are covered for a longer period than July. No one, however, seems to be coming into the market to buy Bars for last half delivery, and the market accordingly is dull for the time being. In many instances those wanting Bar Steel for immediate shipment are paying a premium. In Bar Iron there is a good buying at present prices for spot shipment. Cleveland is ruling higher than the Western markets, due to local conditions. For spot shipment Bar Iron is bringing 1.60c. to 1.65c., Youngstown, with one or two of the mills being willing to sell under that price. There is some small buying of Standard Rails by the traction lines. One or two contracts reaching 1000 tons have been closed, but the market for the most part is quiet. Standard Rails are quoted \$28, Pittsburgh. The Sheet market is fairly active and strong but not buoyant. The mills have persistently refused to take contracts for long time delivery, and the buying is confined to the present needs of consumers. The supply and demand are about balanced. Quotations on Blue Annealed out of stock are based on No. 10 at 2.15c. American Bessemer out of stock are based on No. 28 at 2.80c.

**Old Material.**—The buyers are not taking any material, and while the dealers are having all sorts of Scrap offered them, they are not able to turn it over. Some few sacrifice sales are being made at very low figures. Due to the unsteadiness and uncertainty of the falling market, prices are mostly nominal and in some instances may not be representative. According to the best information, however, the market holds nominally as follows, all gross tons: Old Steel Rails, \$16 to \$16.50; Old Car Wheels, \$15 to \$15.50; Heavy Melting Steel, \$16. All net tons: Cast Borings, \$8.50 to \$9.50; No. 1 Busheling, \$14; No. 1 Railroad Wrought, \$16; Iron Car Axles, \$21 to \$22; No. 1 Cast, \$13.50; Stove Plate, \$10 to \$10.50; Iron and Steel Turnings and Drillings, \$11 to \$11.50.

## Philadelphia.

FORREST BUILDING, May 2, 1905.

Reports in regard to the Iron trade are not as optimistic as they were some time ago, yet it is difficult to see where there has been any change, except that buying is less urgent. This, however, could hardly be otherwise, as enough material was engaged during the first three months to supply requirements for twice or three times that length of time, so that it would be irrational to expect buying to continue without being followed by a period of dullness. The situation is therefore perfectly healthy, although the dullness may be somewhat protracted, partly for the reason mentioned, but more so because of a feeling of intense conservatism which has developed among buyers. The production of 2,000,000 tons of Pig Iron per month is enormous, and there is a disposition to see how the market takes it before making further commitments. So far there are no evidences of overproduction, no countermands, no postponements of shipments, but rather the reverse, if anything. What has been bought is being taken, and, so far as now appears, business conditions have suffered no impairment whatever. Finished Material is in good demand; so much so that premiums are quite frequent for prompt shipments, as most of the leading mills are unable to guarantee deliveries inside of 60 to 90 days. It may therefore be safely asserted that the immediate conditions are as favorable as they have been at any time during the year. At this season, however, it is the rule to take fresh bearings in regard to the later months of the year, as a great deal will depend upon the crops, besides which there are other influence which may be of great importance, but which at the moment are too indefinite to be figured on

with any degree of certainty. The flurry in Wall Street may be a temporary incident, but all the same it has caused considerable uneasiness, which may not be allayed for some little time. Then there are the uncertainties in regard to the war in the East, which may be fraught with great possibilities, although they should not be inimical to the industries of the United States, no matter what may happen.

**Pig Iron.**—It is a long time since a little business has been done in Pig Iron as during the past two or three weeks. In a modified sense there is no demand at all, and while there is no surplus Iron for sale, makers are in some cases getting quite uneasy. It is curious that this feeling should be entertained, as it is only a month or so ago that they were all hoping and praying for a let up in the demand, fearing that if it continued prices would get beyond control. Sellers were not slow to express some degree of amusement at the anxiety of buyers to get in on an apparently rising market, yet they seem to be just as uneasy themselves when buying stops off for awhile. Of course it is impossible to say what the final outcome will be, but the immediate conditions appear to be just as sound as at any time since the upward movement commenced. It is perfectly true that the time is at hand when the market will meet a severe test, and until that has been applied, buying will probably not be very heavy. It is not a question of how much Iron will be bought during the next three months, but how much will be consumed. The current output is estimated at 2,000,000 tons per month, and as the best available information is that it is all taken, there is certainly no basis for pessimistic views in regard to the situation. Things may change within the next few weeks, but there is as much chance that they will be for the better as for the worse; so that it would be premature to take ground on either side until the test is actually made. The crop situation will have great influence during the next couple of months, and as this is a proverbially uncertain matter, there are good reasons for expecting that buyers will for the present be very cautious in regard to new commitments. The financial horizon has been somewhat clouded during the past week or two, but it is not regarded as likely to affect the industrial situation, unless trouble breaks out in new directions, which is not expected by those who are in close touch with financial affairs. Prices of Pig Iron are unchanged and those who need good brands of Iron have to pay full prices. Misfit Irons have been offered and taken at comparatively low prices, but they have no influence on the general market, which for standard brands are quoted as follows for Philadelphia and nearby deliveries:

No. 1 X Foundry.....	\$18.25 to \$18.50
No. 2 X Foundry.....	17.75 to 18.00
No. 2 Plain.....	17.25 to 17.50
Standard Gray Forge.....	16.00 to 16.25
Ordinary Gray Forge.....	15.50 to 15.75
Basic.....	16.75 to 17.00
Low Phosphorus.....	20.75 to 21.00

**Steel.**—The market is rather quiet, although there are a good many inquiries which will probably result in business at an early date. The apathy which has affected Pig Iron and Scrap material is in some measure reflected in Steel, but there is plenty of business in sight, and no recession in prices is looked for, \$28 being an inside figure for good sized lots.

**Muck Bars.**—There is no demand at the moment, and prices are nominal at about \$29 asked, seller's mill.

**Ferromanganese.**—Small lots are selling at about \$48.50 to \$49, but a little better could probably be done on 1000-ton lots and upward.

**Plates.**—The Plate mills are extremely busy, and have plenty of specifications for May shipments, and quite a fair inquiry for later dates. In some cases premiums have to be paid for prompt shipments, although forward deliveries are booked at the official quotations, which are as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, over 14 inches wide.....	1.73½	1.78½
Tank, Bridge and Boat Steel, rectangular Plates, 14 inches wide and under.....	1.63½	1.68½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. The following extras apply:		
3-16-inch thick.....	\$0.10	pounds extra.
Nos. 7 and 8, B. W. G.....	.15	"
No. 9, B. W. G.....	.25	"
Plates over 100 to 115 inches.....	.05	"
Plates over 110 to 115 inches.....	.10	"
Plates over 115 to 120 inches.....	.15	"
Plates over 120 to 125 inches.....	.25	"
Plates over 125 to 130 inches.....	.50	"
Plates over 130 inches.....	1.00	"

**Structural Material.**—There is a very active demand for this class of material, and in the majority of cases orders are taken subject to six to eight weeks' delay in shipments. Some sizes may occasionally be had more promptly, but as a rule the mills require considerable leeway as regards deliveries, and for short dates require extra prices. General quotations, however, are as follows: Beams, Channels and An-

gles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.65c. to 1.68c.

**Bars.**—The demand is less urgent, but specifications come in very satisfactorily, so that the mills are in good shape as regards immediate employment. The falling off in the demand for Skelp is having some influence, but it is believed to be only temporary. Steel Bars are well taken and mills in some cases require a leeway of from four to six weeks before they can guarantee deliveries, particularly on Flats, while Rounds can be had at from two to three weeks' notice. Prices are 1.73½c. to 1.80c. for Best Refined Iron and 1.63½c. to 1.70c. for Steel, the latter figure for prompt shipments in carload lots and upward.

**Sheets.**—The market is a little dull and buyers of large lots expect concessions, but as a rule prices are quoted as follows: 18 to 20 gauge, 2.40c.; 22 to 24 gauge, 2.50c.; 25 and 26 gauge, 2.60c.; 27 gauge, 2.70c., and 28 gauge, 2.80c. Best grades are two to three tenths higher.

**Old Material.**—The market for Old Material has certainly struck a nasty snag. Consumers have withdrawn from the market, and as there is an embargo against nearly all the large mills nothing can be done with them for the present. Prices are therefore almost unquotable, although if business could be done they would probably be within the following limits for deliveries in buyers' yards:

Scrap Rails.....	\$16.75 to \$17.00
No. 1 Steel Scrap.....	16.25 to 16.75
Old Steel Axles.....	20.00 to 20.50
Old Iron Axles.....	25.00 to 25.50
Old Iron Rails.....	22.50 to 23.00
Old Car Wheels.....	16.00 to 17.00
Choice Scrap, R. R. No. 1 Wrought.....	20.00 to 20.50
No. 1 Yard Scrap.....	17.50 to 18.00
Long and Short.....	16.50 to 17.00
Machinery Scrap.....	15.25 to 15.75
Low Phosphorus Scrap.....	21.50 to 22.50
Wrought Iron Pipe.....	15.00 to 15.50
No. 1 Forge Pipe Scrap.....	15.50 to 16.00
No. 2 Light Ordinary.....	12.00 to 12.50
Wrought Turnings.....	14.00 to 14.50
Axle Turnings, Choice Heavy.....	15.50 to 16.00
Cast Borings.....	10.00 to 10.50
Stove Plates.....	11.00 to 11.50

## Cincinnati.

FIFTH AND MAIN STS., May 3, 1905.—(By Telegraph.)

**Pig Iron.**—The opening of May shows little improvement over April and the buying movement, outside of a number of small orders, has been exceptionally quiet and unsatisfactory. Most of these sales were made for early shipment and went to consumers whose stock had been depleted. The larger class of consumers do not seem to be in the market and the majority of them are known to be covered for the next 30 or 60 days. This, according to some, is merely a waiting market, which they say can be productive of no evil results as long as consumption follows so closely the line of production. While it is true that the Steel industry is melting a very heavy tonnage, it is also a fact that the general jobbing foundry trade, outside of specializing, is far below normal and shows no signs of any betterment. In our report last week we stated that there was a rumor that one of the Southern furnaces was willing to contract for 25c. less than the schedule then in effect. During the week this rumor has become a certainty, and to-day it is a well established fact that one of the largest Southern producers has authorized its agents to contract for business in any quantity whatever on a \$13.25 basis for No. 2. We are told that even this concession fails to interest the trade, the inference being that this shading is but the beginning of lower prices and that they will defer making future contracts until absolutely forced to do so. Northern Iron is apparently holding at \$15.75 at the furnace, with sales aggregating very light tonnage. We learn of one inquiry from Louisville for 1000 tons of Southern Nos. 2 and 3 for delivery over last half of the year; also one for the same tonnage from a Michigan concern for Basic, delivery covering three or four months, beginning May 1. A sale of 400 tons of Southern No. 2 was made in Michigan, the price being \$13.25, Birmingham, basis. It is announced that on October 25 next the Virginia Iron, Coal & Coke Company will appoint Hickman, Williams & Co. its sole selling agents in the territory from Pittsburgh west. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$16.50 to \$16.75
Southern Coke, No. 2.....	16.00 to 16.25
Southern Coke, No. 3.....	15.50 to 15.75
Southern Coke, No. 4.....	15.00 to 15.25
Southern Coke, No. 1 Soft.....	16.50 to 16.75
Southern Coke, No. 2 Soft.....	16.00 to 16.25
Southern Coke, Gray Forge.....	15.00 to 15.25
Southern Coke, Mottled.....	14.50 to 14.75
Ohio Silvery, No. 1.....	20.40 to 20.65
Lake Superior Coke, No. 1.....	17.15 to 17.40
Lake Superior Coke, No. 2.....	16.65 to 16.90
Lake Superior Coke, No. 3.....	16.15 to 16.40

### Car Wheel and Malleable Iron.

Standard Southern Car Wheel.....	\$18.50 to \$19.00
Lake Superior Car Wheel and Malleable.....	18.00 to 18.50

**Coke.**—This market is weak and prices are very irregular. Supply is good and contracts are being well taken care

of. We quote best grades of Connellsville Foundry from \$2.50 to \$2.65, f.o.b. ovens.

**Plates and Bars.**—The mills are said to be unable to supply the demand that exists, and contracts are being delayed thereby. Prices are said to be unchanged. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in smaller lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

**Old Material.**—Trade is a little quiet, and dealers are complaining. Prices are reported to be about the same as last week, perhaps a trifle weaker. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$17 to \$18 per net ton; No. 1 Cast Scrap, \$14 to \$14.50 per net ton; Iron Rails, \$21.50 to \$22 per gross ton; Steel Rails, rolling mill lengths, \$14.50 to \$15 per gross ton; Relaying Rails, 56-lb. and upward, \$23 per gross ton; Iron Axles, \$21 to \$22 per net ton; Car Wheels, \$16 to \$17 per gross ton; Heavy Melting Scrap, \$14.50 to \$15 per gross ton; Low Phosphorus Scrap, \$17 to \$18 per gross ton.

## Pittsburgh.

PARK BUILDING, May 3, 1905.—(By Telegraph.)

**Pig Iron.**—The contemplated purchase of 25,000 to 30,000 tons of Bessemer Iron by the United States Steel Corporation for May has been deferred and unless present plans are changed it will not buy any Iron this month. The reasons advanced are that the Carnegie Steel Company is now operating its blast furnace capacity to maximum capacity, having all its furnaces in blast, and with this increase in output of Pig Iron, together with the falling off in tonnage on some finished lines, such as Tin Plate, Wire and other products, the Steel Corporation officials believe that it will be able to make during May all the Pig Iron it needs. What effect the refusal of the Steel Corporation to buy May Iron will have on the market remains to be seen, but the chances are it may weaken prices, which are none too strong at the present. The fact is becoming apparent that more Iron is being made than consumed. The general price of Bessemer and Basic Iron remains at \$15.50, Valley furnace, but at the same time it is true that some sellers are willing to sell small lots of both Bessemer and Basic at \$15.25 at furnace. Foundry Iron is quiet and some foundries are withholding shipments on their contracts. Prices are a shade easier and Northern brands of No. 2 are held at \$15.75 to \$16, Valley furnace, some sellers refusing to shade the higher price. Forge Iron is also quiet and is distinctly weaker. Standard brands of Northern Forge are offered at \$14.75, Valley furnace, or \$15.60, Pittsburgh, and on a firm offer this price might be shaded 10c. a ton or more.

**Steel.**—Billets and Sheet and Tin Bars for prompt shipment continue scarce and premium of \$3 to \$4 a ton are being paid in some cases for prompt delivery. The falling off in tonnage in some finished lines of product will give the Steel mills a chance to catch up on deliveries, on which they are four to six weeks behind. Bessemer and Open Hearth Billets up to 0.20 carbon for prompt shipment are quoted at \$24, and Sheet and Tin bars, in random lengths, \$26, maker's mill. For shipment over the balance of this year Sheet and Tin Bars could be bought at about \$25, maker's mill.

(By Mail.)

The Steel Corporation is in the market for 25,000 to 30,000 tons of Bessemer Iron for May shipment and the purchase is expected to be closed to-morrow (Wednesday). The tonnage will be divided between the Bessemer Pig Iron Association and the Snyder interest. The price will be \$15.50 at furnace, and negotiations with two other concerns are under way for the sale of a large tonnage of Bessemer and Basic Iron, so that sales that are expected to be closed this week will amount to 40,000 to 50,000 tons. This tonnage, if put through, is expected to have the effect of bracing up the Pig Iron market, which is very dull.

The Jones & Laughlin Steel Company has completed the purchase of the Leetonia mine in the Mesaba region at the reported price of about \$1,500,000. It is said this purchase marks a new high era in prices paid for Mesaba Ore property, the mine having about 10,000,000 tons of Ore in sight. The Lackawanna Steel Company has purchased the Brotherton and the Sunday Lake mines in the Mesaba region, paying somewhat under \$1,000,000 for them.

There has been a distinct lull in the Iron trade for the past two weeks in nearly all lines, and the tone of prices is somewhat easier. The falling off in demand does not neces-



sarily come from a decrease in consumption, but rather from the fact that large jobbers and consumers, as well, bought heavily in February and early in March prior to the general advance in prices, and therefore being pretty well stocked up with goods, are waiting to have these move out before placing new tonnage. It will be recalled that shipments from the mills in March on all kinds of Finished Iron and Steel were much the heaviest in any one month in the history of the Iron trade, and owing to inclement weather these stocks have moved out slowly until recently. There are no signs of distress in the Iron trade, but at the same time it is true that new demand for the past two weeks has been very light, but the mills are quite full of work, filling specifications on contracts.

The quietness is particularly noticeable in the Pig Iron trade, tonnage moving in the past two weeks being very small. Consumers of Pig Iron are pretty well bought up and as it does not seem that prices will be any higher, they are going very slow in the matter of making new purchases. There are some inquiries in the market for Bessemer and Basic Iron for shipment over the last half of the year, and on such inquiries some furnaces are willing to shade present prices about 25c. a ton—i.e., they will agree to sell Bessemer and Basic Iron on the basis of \$15.25, at Valley furnace, over balance of the year. On Iron for shipment prior to July 1 Bessemer and Basic are fairly strong at \$15.50, at furnace, but at the same time it is true that some shippers of Iron, notably to small consumers, are short of shipping directions. The market on Foundry Iron is weaker in tone and while the nominal price is \$16, Valley, for Northern No. 2, this could be shaded at least 25c. a ton. A lot of 900 tons of Iron was offered in this market last week for prompt shipment and was sold at a comparatively low price. Northern Forge is fairly strong at \$15, at Valley furnace, but on a firm offer and for prompt shipment some furnaces would shade this price from 15c. to 25c. a ton. There are indications that some of the Steel works are catching up on orders, and it is more difficult to get premiums for Steel. Long Sheet and Tin Bars are held at \$26, maker's mill, and sales have been made recently at this price. To a Sheet or Tin Plate mill that would agree to contract for Bars for the balance of the year, or say over the next six months, it is probable \$25, at mill, could be done. Bessemer and Open Hearth Billets for prompt shipment are quoted at about \$24, but the amount of such tonnage being sold in small, as most consumers are covered by contracts at lower prices.

In Finished Iron and Steel new tonnage is rather light, and this applies nearly all along the line. The Plate mills are well filled up and tonnage in Structural Steel is fairly heavy, but on Sheets, Tin Plate, Tubular Goods and Bars is only fairly good. The favorable weather, which promises to continue, will no doubt soon have the effect of bringing about a better demand for finished forms of Iron and Steel that are used in outdoor work. Such betterment in demand is already noticeable in Tubular Goods, which are moving more freely than two or three weeks ago. New tonnage in Sheets and Tin Plate is rather light, the mills running mostly on contracts. The same is true of the Wire trade, but this should open up vigorously in a short time. Prices on Cotton Ties for this year have been fixed at 85c. a bundle and tonnage promises to be large. The Scrap and Coke trades are very dull in demand, with a distinctly easier tendency in prices.

**Ferromanganese.**—The activity that has existed in this product for a month or more has quieted down to some extent, consumers being pretty well covered for some time ahead. There is no domestic Ferro to be had, and foreign 80 per cent. brings \$49 to \$50 in large lots, and up to \$52 for small lots delivered.

**Rods.**—Demand for Rods has been very quiet for some time, owing to dull condition of the Wire trade. Prices are firm on the basis of \$34 for Bessemer and Open Hearth and about \$35 for Chain Rods. We do not hear of any sales in this market for some time.

**Skelp.**—Conditions in the Skelp trade are very quiet, and there is practically no new demand. In fact, there are no longer any large buyers of Skelp in the Pittsburgh district, as all the local Pipe mills make their own. Prices have eased off to some extent, and we quote Grooved Iron Skelp at 1.65c.; Sheared, 1.75c.; Grooved Steel, 1.60c., and Sheared, 1.65c., all for ordinary widths, f.o.b. maker's mill. On a firm offer and for prompt shipment some mills that are in need of specifications would likely shade these prices.

**Steel Rails.**—A good deal of tonnage is being placed in Girder Rails for electric street car lines, the Cambria Steel Company and other mills having a very large tonnage for this class of work. Some fair sized orders for Standard Rails are being placed, but these are mostly for small lots. There is also a good deal of inquiry for Rails for export. We quote Standard Sections at \$28 at mill and Light Rails at \$24 to \$27, depending on sections.

**Structural Material.**—It is said the American Bridge Company booked in April close to 75,000 tons of Structural Steel, while the tonnage of other Structural concerns was proportionately large. The outlook continues good and

the leading Structural mills are filled up with work for some months. Deliveries from the mills are still unsatisfactory, particularly in Open Hearth Material. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 x 1/4 inch thick up to 6 x 6 inches, 1.60c.; Angles, 8 x 8 and 7 x 3 1/2 inches, 1.70c.; Zees, 3-inch and larger, 1.60c.; Tees, 3-inch and larger, 1.65c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Plates.**—A moderate amount of new tonnage is being placed in Plates, but most leading consumers are pretty well covered with contracts at lower prices than are ruling now. Specifications on these contracts are coming in very freely and the leading Plate mills are filled up for several months ahead. Prices are firm and are as follows: Tank Plate, 1/4-inch thick, 6 1/4 to 14 inches wide, 1.50c., base; over 14 inches wide and up to 100 inches in width, 1.60c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than 1/4-inch to and including 3-16-	
inch Plates on thin edges.....	\$0.10
Gauges No. 7 and No. 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates vary-	
ing not more than 4 inches in width at ends,	
narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Roller and Flange Steel Plates.....	.10
Marine, "A. B. M. A." and ordinary Fire Box	
Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	

**TERMS.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of 1/2 of 1 per cent. is allowable. Pacific Coast base, 1.40c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

**Sheets.**—As previously noted, new tonnage in Sheets is rather light, due to the fact that the large trade placed heavy contracts prior to the advance in prices, on which they are specifying at a fairly satisfactory rate. However, the amount of tonnage placed since the last advance in prices was made has been very limited. Any unevenness in prices of Sheets is among the jobbers, who have large stocks and sometimes shade mill prices to slight extent in order to move these stocks more freely. Prices quoted by the mills are as follows: Black Sheets, No. 24, box annealed, one pass through cold rolls, 2.15c.; No. 26, 2.25c.; No. 27, 2.30c., and No. 28, 2.40c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.23c.; No. 28, 3.45c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.75 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at \$2.95 for 2 1/2-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

**Iron and Steel Bars.**—Some inquiries are in the market from the implement makers on contracts for Steel Bars and other shapes running over six months in a year from July next. New tonnage being placed is only fairly large, as the leading Steel Bar interests took heavy contracts from their customers prior to the advance in prices, thus allowing them to cover their wants for some months ahead. Tonnage in Iron Bars is of moderate volume, but the mills could handle more business if they had it. The Amalgamated Association now in session in Detroit is likely to ask an advance over the present puddling and finishing rates, to become effective July 1. If this advance should be granted it will affect mills of the Republic Iron & Steel Company that roll Iron Bars, but will not affect the Carnegie Steel Company, Jones & Laughlin Steel Company and Crucible Steel Company, these concerns not doing any puddling and not making any Iron Bars. We quote Common Iron Bars at 1.60c. to 1.65c., the lower price being made only on desirable orders and nice specifications. Bessemer and Open Hearth Steel Bars are 1.50c., base, for carloads and larger lots, with the usual advance for small lots.

**Hoops and Bands.**—Specifications on old contracts for Hoops and Bands, made when prices were \$3 a ton or more lower than they are now, are specifying more freely than for some time, but the amount of new tonnage being placed with the mills is small. We quote: Steel Hoops at 1.65c. and Bands at 1.50c., extras on the latter as per National Steel Bar card.

**Cotton Ties.**—The Cotton Tie makers fixed prices last week at 85c. per bundle, the action being taken too late to be printed in our previous report. It is estimated that the Cotton trade this year will require about 2,500,000 bundles, and this tonnage has all been practically placed, being divided

between Carnegie Steel Company, Pittsburgh Steel Company, Sharon Steel Hoop Company and Atlanta Steel Hoop Company. The new prices are 85c. for 3000 bundles and over, and 88c. for less than 3000 bundle lots.

**Tin Plate.**—New demand for Tin Plate is light, buyers are specifying fairly liberally on season contracts placed several months ago, most of them before prices were advanced. Stocks of Tin Plate in jobbers' hands are heavy, but with a good fruit crop, these will likely move out very fast. The general price for 100-lb. Cokes is \$3.55, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in 10 days.

**Merchant Pipe.**—We are advised that the favorable weather of the past several weeks has brought about an increased demand for Merchant sizes of Pipe, while specifications on contracts are coming in more freely. A fair amount of new tonnage is being placed at the higher prices, which became effective April 20. Discounts in carloads to consumers are as follows:

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
1/4 and 1/2 inch.....	67	51	65	49
3/4 and 1 inch.....	71	59	69	57
1 1/4 to 6 inches.....	75	65	73 1/2	63 1/2
7 to 12 inches.....	70	55	68 1/2	53
Extra strong, plain ends, 1/2 to 3/4 inch.....	60	48	58	46
1/2 to 4 inches.....	67	55	65	53
4 1/2 to 8 inches.....	63	51	61	49
Double extra strong, plain ends, 1/2 to 8 inches.....	56	45	54	43

**Boiler Tubes.**—Demand for Tubes continues quite active, and the National Tube Company and some of the independent mills are considerably behind in deliveries. The recent unevenness in prices is referred to as having existed among one or two of the outside mills, and did not affect the general market. Carload discounts are as follows:

	Iron.	Steel.
1 to 1 1/4 inches.....	41	44
1 1/4 to 2 1/4 inches.....	41	56
2 1/4 inches.....	46	58
2 1/4 to 5 inches.....	53	64
6 to 13 inches.....	41	56

**Merchant Steel.**—Specifications on contracts are fairly heavy, but new tonnage is only of moderate volume. We quote: Smooth Finished Tire, 1.70c.; Railway Spring Steel, 1.70c.; Cutter Shoes, 2.15c. to 2.20c.; Toe Calk Steel, 2c. to 2.05c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Smooth Finished Machinery Steel, 1.70c. to 1.75c.; Crucible Tool Steel, ordinary grades, 5 1/4c. to 8c.; extra grades, 10c. and upward. Demand for Shafting is fairly active and we quote Cold Rolled at 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered in base territory.

**Railroad Spikes.**—Demand is active and we quote Spikes at \$1.70 per 100 lbs. and \$1.75 for smaller lots, f.o.b. at mill.

**Spelter.**—Demand is quiet and prices continue easier. St. Louis quotes prime grades of Western Spelter at about 5.65c., equal to 5.77 1/2c., Pittsburgh.

**Coke.**—There is practically no new demand for Coke and both Furnace and Foundry for prompt shipment continues to be offered at low prices. Strictly Connellsville Furnace Coke has sold for prompt shipment recently as low as \$1.90, at oven, while mountain grades of Furnace Coke are offered as low as \$1.50 a ton at oven or lower. Connellsville 72-hour Foundry Coke is \$2.75 a ton at oven to consumers. Output of Coke continues enormously heavy, the Frick Coke Company operating 90 per cent. of all its ovens. The product of the Upper and Lower Connellsville regions last week was a trifle over 350,000 tons.

**Iron and Steel Scrap.**—There are practically no buyers of Scrap at present and the tone of the market is decidedly easier. This condition is likely to continue up to about July 1, as consumers seem pretty well covered for the next 60 days. Prices have gone off to some extent, probably about 50c. a ton. We quote: Heavy Steel Scrap, \$16, but on a firm offer and for prompt shipment this price would be shaded. Bundled Sheet Scrap is being offered more freely and prices have declined, this material now being freely offered at \$14.50; No. 1 Wrought Scrap is held at \$19.50; Turnings, \$12 to \$12.50; Old Iron Rails, \$21; Old Steel Rails, short pieces, \$15.75 to \$16; long pieces, \$15.50; Machinery Cast Scrap, \$15.25, all in gross tons, f.o.b. Pittsburgh. We note sales of 500 tons of No. 1 Wrought Scrap at \$18.50 in net tons and 500 tons of Machinery Cast Scrap at \$15.25 in gross tons.

Russell, Burdsall & Ward, Port Chester, N. Y., large manufacturers of nuts and bolts, are negotiating for the purchase of the plant of the Youngstown Bolt Company, Youngstown, Ohio, which has been idle for some time.

## Birmingham.

BIRMINGHAM, ALA., May 1, 1905.

There can be no doubt as to some weakening of the market since last report, but it cannot be called a general weakening. The market is still quoted on the basis of \$13.50 for No. 2 Foundry and at this value a very material part of the week's business was done. But there was enough business accepted at \$13.25 basis to make it worth investigation. An investigation merely establishes the facts and acceptable buyers would find but little difficulty in duplicating the purchases. Strong efforts were made to obtain the details of the sales, especially as to the quantity, but they failed.

One interest reports a very good trade on a basis of \$13.50 for No. 2 Foundry, which, in volume, is fully up to its current output. But all the interests are not so fortunate. Some of them are beginning to accumulate stocks now, but not to an extent sufficient to create any uneasiness. The sales reported clearly show a very quiet condition of the Iron market.

The market is full of eddies just now, and it is hard to keep out of the influence of all of them. It is reported by some influential interests that important buyers have taken some very respectable lots of Iron at about current quotations. But your correspondent is inclined to the belief that no lot of consequence went at a price above \$13.25 for No. 2 Foundry. He saw some orders for June, July and August delivery accepted on a basis of \$13.50 for No. 2 Foundry, and that is the longest delivery to which he has had access. There was not much done for the last half of the year's delivery. The market seems to impress some of the most conservative holders with the idea that as a rule the larger buyers had pretty well filled up for the first half of the year and the market was left mainly to the buyers of medium and small lots. And it was very evident from the manner of their buying that they were only supplying their necessities for the present and the near future. We are thoroughly satisfied that material sales of Basic Iron was made the past week and for Eastern account, the price being around the price of No. 2 Foundry.

Some interests tell your correspondent that they have been keeping close track of Southern buyers and are thoroughly satisfied that they have accumulated no stock in their yards and are buying just what is necessary to keep them going. As a rule they are taking on no piled up stocks, and their purchases are about the same each month. It is gossip that the most of the round lot purchases of late are for Eastern account, though your correspondent has seen some that were made for Western account.

With \$13.50 given as the basis for No. 2 Foundry, add 50c. for the higher grade, as well as deduct for No. 2 grade 50c., and you have the market. For what are known as the lower grades deduct 25c. for each grade. There was one sale early in the week of 1000 tons of No. 3 Foundry at \$13 that, in delivery, covered the third quarter.

The new furnace just completed for the Tennessee Company was put in commission last Friday, when the first run of Iron was made. So far everything has worked very smoothly. In a short time the new furnace of the Woodward Iron Company will also be put in blast. It is practically completed. These additions give us 27 or 28 furnaces in blast in the district, with the prospect good for an increasing output.

The Big Sandy Iron Company has been incorporated, capitalized at \$50,000. W. A. Pinckard is president and P. M. Pinckard is secretary-treasurer. It will develop some fine mineral lands in the southern edge of the county.

The most important deal in Coal lands involved about 5000 acres situated near Nauvoo on the North Alabama Railroad. The price at which the property changed hands has been withheld.

We are making progress every week to normal conditions in both Coal and Coke. For both there is still a good demand and quotations are pretty close to normal prices. Coke of local make of very acceptable quality can be had at \$3.50 per ton, and Coal runs all the way from \$1 to \$2.50, depending on the seam and conditions of purchase.

The Scrap Iron market is unchanged, without any transactions of moment.

The building trades are having a regular boom and every building contractor is full of engagements that will occupy the entire building season.

The Portland cement works of the Société Casale Monferrato, at Venice, are built on foundations which consist of a level area of armored concrete, built around and uniting with the heads of concrete piles. These piles were formed by driving wooden piles, which were then removed with a twisting motion and the hole filled with a lean concrete. The rotary drying kilns in this plant are 72 feet in length and nearly 7 feet in diameter, and dry the clay in the usual way with hot gases.



## A Serious Strike in Chicago.

Chicago is now in the throes of a teamsters' strike which threatens to become as serious a conflict as the Debs insurrection of 1892, which tied up all the railroads and which was characterized by so much rioting and violence that it was necessary to call in United States troops. The present strike in Chicago is the immediate outcome of a sympathetic strike called by the Teamsters' International Union on Montgomery Ward & Co. in an endeavor to force that firm to make terms with 19 striking garment workers. The firm in question had been singled out by the unionists for strategic reasons, as it was known that the firm's teaming interests were vastly more important than the small force of garment workers it employed. This action on the part of the American Federation of Labor was made the signal for extensive preparations for defense on the part of the Chicago Employers' Association and similar bodies, and it is through the determined stand taken by the members of the Employers' Association that the strike has been forced to spread into nearly all the teaming interests of the city.

The employers' associations are ready for a prolonged fight and are forcing the issue by inducing one after another large interest in the city to deliver goods to the struck firm, the refusal on the part of unions to do the delivery resulting in their immediate discharge, which is, of course, followed by a wholesale walkout of all teamsters employed by the firm. The strike has in this way spread to express companies and coal teamsters, besides the wholesale and retail dry goods firms, department stores and so many other lines that over 3000 teamsters are now out on strike. Incidentally the difficulty of securing the delivery of materials has thrown thousands of other men out of work by stopping manufacturing and building operations of various kinds. A feature of the strike that had not entered previously into labor disturbances in Chicago is the placarding of wagons with posters calling attention to the fact that the company owning the team is protected by an injunction of the United States Circuit Court, the defiance of which, of course, means serious punishment to the individual and the use of United States troops if necessary. This move was made by a new company, known as the Employers' Teaming Company, which has taken over several large teaming contract firms and which is adding to its equipment hundreds of teams, which are being imported from other centers, together with nonunion teamsters to drive them.

The president of the Chicago division of the American Federation of Labor announced some time ago that to win this strike he would, if necessary, call out every man, woman and child belonging to any labor union working in Chicago, but later reconsidered this radical move. Much violence has resulted from the strike already and hundreds of brutal assaults, some with fatal results, are reported. At present the plan of the unionists seems to be to concentrate their efforts on picketing coal yards and coal teams, with a view to shutting off the fuel supply from the whole city, in order to bring the employers to terms. Nearly 1000 policemen are detailed on strike duty and what freight is moved by firms on whom strikes have been declared is moved with heavy escorts of armed policemen. The employers' associations and the employers generally have made up their minds that this must be a finish fight and they are determined to wipe out of existence a union which has been used as a club by all other unions to enforce its demands, dictating terms to employers who were dependent upon teams for transfer of materials. The American Federation of Labor, on the other hand, is equally insistent that it shall be a finish fight and that no matter what it costs in men or money it must be won.

What is said to be the largest caisson ever built in this country was successfully launched at the Harlan & Hollingsworth Shipyards, Wilmington, Del., on April 26. It was constructed for the Government and will be used in the dry dock at the League Island Navy Yard.

## Trade Publications.

**Grinding Wheels.**—Corrugated Grinding Wheel Company, Philadelphia, Pa. Pamphlet. Describes a new grinding wheel, the cutting edge of which is formed with slanting corrugations or teeth, giving a shearing effect in grinding. The figures from a comparative test on the same piece of iron, using one of these wheels and a plain wheel, are given, showing a gain of time of some 140 per cent. This wheel was illustrated in *The Iron Age* of April 6, 1905.

**Beam Shears.**—Henry Pels & Co., 68 Broad street, New York City. Special circular No. 28. Confined to descriptions and illustrations of the Johns patent beam shears for cutting beams, channels, angles and other structural shapes. The illustrations show the tool in use, one form mounted on a truck and driven by an electric motor, a diagram of the machine with the parts lettered and keyed, and sketches showing the manner in which different shapes are cut. Other illustrations show a punching machine, horizontal boiler punch, splitting shears and a bar and angle cutter. All these machines are made in accordance with the Johns patents, the frames being constructed of steel plate instead of cast iron. A great advantage of this construction is a gain in compactness and reduced danger of breakage.

**Electric Heaters.**—Gold Car Heating & Lighting Company, 17 Battery place, New York City. Illustrated catalogue, 9 x 12 inches, 24 pages. Concerns Gold's improved electric heaters and other modern apparatus for warming all kinds of electric railway cars. Much is said concerning the proper apparatus for heating and the most effective way of disposing the parts. One of the features in the heating system is a regulating switch, which is shown in some detail. The latter part of the book contains other apparatus, such as small electric heaters for house use, a hot water car heating system and the Gold Ideal safety valve.

**Electric Traveling Hoists.**—Pawling & Harnischfeger, Milwaukee, Wis. Bulletin No. 16, superseding Bulletin No. 13. Shows 12 types of hoists, some being equipped with two motors and others with only one. They are adapted for 110, 220 or 500 volts direct current, and the standard machines range in sizes up to 5 tons capacity. The hoists are furnished with load brakes, motor brakes and limit switches. Special machines are built on order. To assist the purchaser, a list of questions are given answers to which should be covered in the specifications accompanying any order. Among the hoists shown is one specially adapted for foundry service, which was illustrated in *The Iron Age* of October 27, 1904.

**Thermit.**—Goldschmidt Thermit Company, 43 Exchange place, New York City. Pamphlet. Deals with the repair of roll bosses by welding the broken parts with thermit. A peculiar advantage of this substance is that it may be ignited on the piece direct, obviating the expense of a crucible. About 30 pounds of thermit are required to a square foot of welded surface. A peculiar advantage is that steel may be welded to cast iron or vice versa. The back of the pamphlet contains testimonial letters.

**Railway, Mill and Foundry Supplies.**—Walter A. Zelnicker Supply Company, St. Louis. Cloth bound, illustrated catalogue. Size, 6½ x 9 inches; pages, 831. Complete catalogue of railway, mill and factory supplies, heavy hardware and machinery. Compiled in the interest of railroads, saw mills, lumbermen, contractors, foundries, machine shops, factories, mills, mines and kindred industries, and contains useful information and tables of value to those engaged in these lines of trade.

**Paints for Metals.**—National Paint Works, Williamsport, Pa. Booklet. A Review of Technical Paints for Metals, 1905 edition. Deals comprehensively with the influences that tend to injure paint and how they may be combated. The pigments and vehicles used in this company's paints are freely discussed and the particular paints best suited to the different outdoor purposes are indicated. The last few pages contain full descriptions of the several grades and kinds of paint made, each one being taken up individually. Throughout the booklet is enlivened with illustrations of prominent structures on which National paints were used.

**Steam and Oil Separators.**—Crane Company, Chicago. Advance circular No. 01. Size, 10½ x 13½ inches; pages, 26. Describes Crane separators for eliminating water from live steam and oil from exhaust steam. Made in sizes from 1 to 30 inches, in horizontal, vertical, angle and distributing types.

**Corliss Engines and High Pressure Boilers.**—Murray Iron Works, Burlington, Iowa. Miniature replica of catalogue No. 55. The original is 7 x 9 inches and contains 62 pages. The copy is to half scale exactly. A line of Corliss engines for all classes of service is shown, all of the various parts being described in detail. This is followed by a few pages concerning Murray high pressure boilers, water tube boilers and feed water heaters.

**Wood Working Machinery.**—H. B. Smith Machine Company, 123 Liberty street, New York City. Folder. Gives illustrations and short descriptions of the following machines: A shaper, jointer, molder, tenoner, planer, universal saw, band saw, scroll saw, swing saw and mortiser.

## New York.

NEW YORK, May 3, 1905.

**Pig Iron.**—No sales of importance have transpired in this market. Commission merchants report a fair run of orders from day to day, which results in a volume of business that only seems light in comparison with the recent very heavy trade. Quotations are as follows: Northern Iron, at tidewater, \$18 to \$18.50 for No. 1 Foundry, \$17.50 to \$17.75 for No. 2 Foundry, \$17 to \$17.25 for No. 2 Plain and \$15.75 to \$16 for Gray Forge. Alabama and Tennessee brands are quoted at \$17.25 to \$17.50 for No. 1 Foundry and \$17 to \$17.50 for No. 2 Foundry.

**Steel Rails.**—Purchases by railroad companies are confined to small lots for actual requirements, but it is understood that inquiries are being received for export which involve considerable tonnage. Standard Rails are quoted at \$28 at mill, and Light Rails at \$23 to \$26 at mill, according to section.

**Cast Iron Pipe.**—Current business continues to be confined to small lots, but orders of this kind are sufficiently numerous to keep the foundries well employed. Eastern foundries quote carload lots at \$28 to \$28.50 per net ton for 6 to 8 inch at tidewater, and are very firm in their views as to prices.

**Finished Iron and Steel.**—The American Bridge Company reports its April business as aggregating 70,000 tons. Half as much is already in sight for this month, and from present appearances the Structural trade is entering upon a period of much greater activity. The building trade is rapidly increasing in its demands for Structural Material and the railroad and highway bridge business is also very promising. It would now appear quite probable that by early summer great difficulty will be found in securing deliveries of material by those who have not had the foresight to cover their requirements. Other branches of the Finished trade continue in excellent condition, with mills well employed and new orders coming in quite freely. Quotations at tidewater are as follows: Beams, Channels, Angles and Zees, 1.74½c. to 1.84½c.; Tees, 1.79½c. to 1.89½c.; Bulbs, Angles and Deck Beams, 1.84½c. to 1.94½c.; Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine, 1.94½c. to 2.04½c.; Fire Box, 1.94½c. to 2.50c., according to specifications; Refined Bar Iron, 1.74½c. to 1.84½c.; Soft Steel Bars, 1.64½c. to 1.74½c.

**Old Material.**—Although the market is very quiet as a rule, some dealers have been fortunate in finding consumers in need of further supplies. Sales are thus reported of Heavy Cast Scrap aggregating 2000 tons at close to the maximum price in the past 60 days and of about 2000 tons of Steel Scrap at about 50c. under recent prices. Rolling mill stock is very weak, and quotations are difficult in the absence of sales. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails.....	\$20.50 to \$21.50
Old Steel Rails, rerolling lengths.....	15.00 to 16.00
Old Steel Rails, short pieces.....	14.50 to 15.00
Relaying Rails.....	20.00 to 21.00
Old Car Wheels.....	15.50 to 16.50
Old Iron Car Axles.....	21.50 to 22.50
Old Steel Car Axles.....	18.00 to 19.00
Heavy Melting Steel Scrap.....	14.50 to 15.00
No. 1 Railroad Wrought Scrap.....	18.50 to 19.50
No. 1 Yard Wrought Scrap.....	17.00 to 17.50
Iron Track Scrap.....	16.50 to 17.00
Wrought Pipe.....	13.00 to 14.00
Ordinary Light Iron.....	9.50 to 10.00
Cast Borings.....	8.00 to 8.50
Wrought Borings.....	11.50 to 12.00
No. 1 Machinery Cast.....	14.50 to 15.00
Stove Plate.....	12.00 to 12.50

Rogers, Brown & Co., Pig Iron and Coke, have removed their New York office to the Trinity Building, 111 Broadway.

**A World's Record at Edgar Thomson.**—In 24 hours recently the 11 blast furnaces at the Edgar Thomson plant of the Carnegie Steel Company turned out 5200 gross tons of pig iron, beating the best previous record in March, which was 5112 tons. The rail mill made the astonishing record of 3678 tons of rails in 24 hours, beating the world's record by 749 tons, the best previous record for 24 hours having been 2929 tons. The 11 blast furnaces at Edgar Thomson and the rail mill are being pushed to the utmost and creditable records are of almost daily occurrence.

Reports that the strike at the sheet and tin plate mills of the Whitaker-Glessner Company, Wheeling, W. Va., had been settled are premature. There is a strong probability that the strike will be fixed up in a short time by mutual concessions. The Amalgamated Association, now in session in Detroit, will probably decide to remove the limit of output in sheet and tin plate mills, in which the Amalgamated scale is signed, in order that these may

compete with nonunion sheet and tin plate mills. If this is done the strike at Wheeling will be quickly settled, as the limit of output was the cause of the trouble.

## Metal Market.

NEW YORK, May 3, 1905.

**Tin.**—During the past week business was dull, although some improvement was noted in the number of inquiries; still, consumers are reluctant to buy at the present prices. On Monday sales were made as low as 30c. Tuesday prices were higher, with sales at 30.25c. In the local market the official quotations for to-day are lower, spot being quoted at 30c. to 30.30c.; May, 29.87½c. to 30.25c.; June, 29.50c. to 30c.; July, 29.25c. to 29.75c. In London prices have declined from last week, spot being held at £138 5s. and futures at £134 10s. The arrivals so far this month are 130 tons, while a total of 1805 tons are afloat. The statistics for the month of April, as compiled by C. Mayer, secretary of the New York Metal Exchange, are as follows:

Deliveries into consumption during April were fair, amounting to 2900 tons. The total for the four months of this year shows an increase of 800 tons, compared with the same period of last year.

The combined deliveries of London and Holland for April were 213 tons smaller than last year. For the four months the increase in deliveries amounts to 353 tons, compared with the same of last year.

Shipments from the Straits for April were 944 tons smaller than for the same month of last year. For the four months of this year the decrease in shipments amounts to 137 tons, compared with the same period of last year.

Australia shipped 33 tons less in April, compared with the same month of last year. For the four months of this year the shipments were 111 tons smaller compared with the same period of last year.

The total visible supply on April 30, 1905, is 632 tons below that of April 30, 1904.

Arrivals at the Atlantic ports amounted to..... Tons. 3,505

Total arrivals since January 1, 1905..... 14,990

Of which from Straits by direct steamers..... 6,770

United Kingdom..... 7,220

Holland..... 140

European Continent..... 865

The deliveries for April we figure as..... 2,900

Total deliveries since January, 1905..... 13,400

Deliveries same period in 1904..... 12,600

Statistics for the United States—Pacific ports excluded—

April 30, show as follows: Tons. 2,831

Stocks, including on dock and arrivals..... 1,935

Afloat..... 4,766

Total..... 4,766

Below we give the total statistics for Europe and the United States, showing: Tons.

Total visible supply April 30, 1905..... 13,063

Against visible supply March 31, 1905..... 14,592

Against visible supply April 30, 1904..... 13,695

Against visible supply December 31, 1904..... 14,768

**Copper.**—During the week prices on all grades of Copper declined further. Lake and Electrolytic were held at 15c. nominal, while Casting grades were held at 14.75c. nominal. Business is dull, but indications of an improvement are not lacking, as the exports keep up in good volume. A sale of 1000 tons was made Tuesday for exportation to China, and some small sales have been made to domestic consumers. In the London market prices have experienced a similar decline and spot quotations are held at £65 10s., with futures at £65 12s. 6d. and Best Selected at £70 10s. The exports for the month of April and the first four months of this year are very satisfactory. The total from North Atlantic ports for April was 22,253 tons and the total exports since January 1, 1905, from the same ports were 82,090 tons, against 82,993 tons during the corresponding period last year.

**Spelter.**—During the week Spelter declined further and business was dull. The official quotations to-day are 5.75c. to 5.80c., and in St. Louis the market is dull at 5.62½c. The London closing price to-day is £23 12s. 6d.

**Lead.**—The market is firmer, but business is of small volume, and prices are unchanged at 4.50c. to 4.60c. The American Smelting & Refining Company continues to quote shipment Lead at 4.50c. in 50-ton lots. In St. Louis Lead is held at 4.50c., and the London quotation is slightly lower at £12 11s. 3d.

**Antimony.**—This metal is scarce, Hallett's and Cookson's being held at 8.50c. to 9c., and other grades at 8.25c. to 8.75c.

**Quicksilver.**—The market is practically unchanged, flasks of 75 lbs. being quoted at \$38. The London market is quoted at £7 7s. 6d.

**Nickel.**—The tone of the market is quiet. Prices are practically unchanged, large lots being quoted at 40c. to 45c., and smaller quantities at 50c. to 60c.

**Tin Plate.**—Prices remain firm and business continues in large volume. The American Sheet & Tin Plate Company continues to quote \$3.74 a box for 14 x 20 100-lb. Coke Plates, f.o.b. New York, or \$3.55, f.o.b. Pittsburgh. Plates are now held in Swansea at 11 shillings 9 pence.

Emil Baerwald, metal broker and dealer in Pig Tin, has removed his office from 29 Broadway to 100 Broadway, New York City.



The shipment of Tin from Australia and the Straits Settlements is reported by John P. Bray, Consul-General, Melbourne, Victoria, show a material increase for the year 1904. This increase is owing maybe to the American demand for increased supplies, and the total exports of Tin from these two producing points for the five years ending with 1904 is as follows:

Year.	Straits Settlements. Tons.	Australia. Tons.
1900.....	45,565	2,978
1901.....	50,352	3,276
1902.....	51,990	3,206
1903.....	52,171	4,157
1904.....	57,630	2,978

## Canadian Affairs.

### The Tariff Commission.

TORONTO, April 29, 1905.—With the tariff itself Parliament is not expected to deal this session, but before it rises it will probably provide for the reference of the question of tariff revision to a Commission. The Commission has been much heralded. It was promised by Mr. Fielding a year ago, when he submitted his last list of tariff changes. He renewed the promise in the campaign preceding the general elections of last November. In the same campaign Sir Wilfrid Laurier often referred to the Government's purpose to thus investigate the tariff question before laying any further scheme of revision before Parliament.

It is assumed that the composition and *modus operandi* of the Commission will be much the same as of the Commission of 1897. Of that Commission the Finance Minister was chairman and the Minister of Customs and the Minister of Trade and Commerce were members. It was composed solely of Ministers. It visited the various industrial centers and received all deputations that had any recommendations or petitions to present. A large mass of opinion was in this way collected. Unquestionably the balance of the testimony was overwhelmingly on the side of protection, but the Ministers had too recently been engaged in a campaign against protection to yield readily to the consideration urged on that side. The result of the Commission's inquiries was the tariff of 1897, which was something of the nature of a straddle. To meet the wishes of free traders several raw materials were placed on the free list, many specific duties were replaced by ad valorem duties, and sundry reductions were made. To suit the advocates of closer commercial relations with Great Britain the British preference was granted. To please the protectionists the duties on manufactured articles were kept above a revenue basis in most cases and the bounties were retained.

On the tariff question Canadian sentiment is now less mixed than it was in 1897, and the Government is less than ever a slavish adherent to or an uncompromising opponent of any trade theory.

### New Duties Likely to Be More Protective.

Since the country is apparently more nearly than ever unanimous for protection, and since the Government is apparently more accommodating in its tariff views than ever, there is a strong probability that the Commission will submit a scheme of duties more protective on the whole than the present scheme is. Of the Government's new leaning toward protection there are several recent evidences. First, there are the new bounties on wire rods, structural shapes and steel plates. Second, there is the antidumping clause of the tariff. Third, there is the duty on steel rails. Fourth, there is the indisposition of the Government to enter into fresh negotiations for reciprocity with the United States.

Naturally the protectionist sense of the country has been less conspicuous since the general election than before. Resolutions calling for higher duties were put on record by many associations of producers in the latter days of the last Parliament. These, it was hoped, would draw the Ministers into making some assurance satisfactory to industry, for the purpose of capturing votes. Though the manufacturers are less demonstrative now, they may be quite as active as they were previous to last November. Their views are perhaps being quietly pressed on the Government. It is known that steps have

been taken to have such wire as is now on the free list made dutiable.

### Cape Breton Steel and Iron.

Frederic Nicholls, Toronto, vice-president of the Dominion Iron & Steel Company, visited the works at Sydney this week. To his fellow directors, whom he met in Montreal yesterday, he made a report of the operations and conditions there. He stated that the output during the present month exceeded that of any other month in the history of the company. Another feature of the operations was a reduction in the cost. Orders are increasing and sufficient are in hand to keep the plant busy for some time. The lifting of the snow blockade has enabled great progress to be made with the rail mill, and it is expected that rails will be turned out within the next few weeks. Means for increasing the efficiency of the company's works have been provided by the new issue of second-mortgage bonds, which, the chairman reported, has been fully subscribed. Part of the money is to be applied to the construction of new coke ovens, to insure adequate coking plant to keep the blast furnaces in continuous operation. Additions are to be made to the plant at the mines so as to bring its capacity to an equality with the ore demands. An extra steamer is to be chartered for transporting ore to Sydney.

According to advices from Halifax, the Micmac left yesterday for Philadelphia with a cargo of pig iron from the Nova Scotia Steel & Coal Company. Such movements of pig iron from Nova Scotia were common in the high price period that came to an end near the close of 1902. At that time the United States demand was so keen and capacious as to offer a very profitable outlet for all the pig iron the furnaces of Cape Breton had to spare. There was indeed very restricted domestic use for Canadian pig iron then, as the steel industry was not sufficiently developed to take up the whole home output. Another period of comparatively high prices for pig iron has arrived, and it pays to sell Nova Scotia iron across the line. Possibly if the company had steel mills of its own it might find it preferable to use the pig iron itself now that Canadian rolled products, especially rails, are favored by a high protective duty. Evidently the Dominion Iron & Steel Company, which has a rod mill and will soon have a rail mill, does not now believe in exporting its pig iron.

C. A. C. J.

It is reliably stated that the Republic Iron & Steel Company has asked the Amalgamation Association to formulate a special scale for the mills of the company if the association is desirous of maintaining its present friendly relations with this company. Officials of the Republic Company have explained to the Amalgamated officials that they must secure concessions in wage scales in order to compete with mills of the United States Steel Corporation, for which no scales are signed. It is understood that the Republic Company desires material reductions in wages paid to tonnagemen, which are said to be much higher than are paid to tonnagemen in nonunion plants.

The annual meeting of the Jones & Laughlin Steel Company was held in Pittsburgh last week, at which the old Board of Directors was elected, as follows: B. F. Jones, Jr., Willis L. King, J. B. Laughlin, W. C. Moreland, William Larimer Jones, T. O'C. Jones, Robert Geddis, Roland Gary and H. S. Kiehl. B. F. Jones, Jr., is president; Willis L. King, vice-president; J. B. Laughlin, treasurer, and W. C. Moreland, secretary. The company is a close corporation and no reports of its operations and finances are made public.

The report that the Republic Iron & Steel Company, which is now building a blast furnace at Haselton, Ohio, would build a second new stack at that place, is untrue. The company will build only one blast furnace and it is expected to be ready for operation not later than January 1.

On June 2 stockholders of the Sharon Foundry Company will vote on a proposition to issue bonds to the amount of \$200,000. The money will be used to enlarge the works at Wheatland, Pa.

## The Machinery Trade.

NEW YORK, May 3, 1905.

The features of the machine tool trade the past week were the receipt of additional specifications for mechanical equipment and the coming to the front of a number of large projects which have passed the doubtful stage and have reached the point where the purchase of a quantity of machinery will certainly be made within a short time. More of the merchants have received the extensive list of machine tools sent out the week previous by the Erie Railroad, and about all of them are busy preparing their bids. Aside from the increase in inquiries, especially those of large proportions, there was practically no change in business with the exception of the influence exerted by those inquiries toward bettering general conditions. Thus the machinery trade is now on a still firmer basis, with the prospect of a substantial increase in orders.

The bookkeeping departments of both manufacturers and dealers are now busy preparing statements of the business done during the month just closed, and when the statements are completed it is safe to say that they will show some surprising results. The fact that April was not conspicuous as a month in which many large propositions were closed is apt to lead to the conclusion that business was not very good on first glance, but when the figures are ready it will be found that the total of the orders was much greater than was supposed and that the month averaged very well with the corresponding periods of previous years. It will be remembered that almost the entire business of April was made up of orders for comparatively small lots, and as these came in in good volume, the order books as a rule will show good profits.

### Large Railroad Requirements.

There is at the present time nothing occupying the attention of the machinery trade so much as the railroad companies, which are apparently getting ready to purchase large quantities of machinery equipment. On Tuesday the lists in the hands of the merchants were further augmented by that for machine tools sent out by the Norfolk & Western Railroad Company. We understand that the list covers quite a large number of machine tools, mostly of a heavy type, and that they are intended for installation in the company's shops at Roanoke, Va.

There is no abatement in the demands of the various divisions of the Pennsylvania Railroad Company for new equipment to be purchased during the next few months, and from this time on it may be confidently anticipated that there will be a good list of material wanted each week. The Pennsylvania Railroad division expects to make inquiries upon tools and machinery, including cranes, to the extent of at least \$1,500,000. These inquiries will be sent through the purchasing agent in the near future. The present list includes machinery for the Philadelphia & Erie division, the Buffalo & Allegheny Valley division and the Pennsylvania Railroad division, and is made up as follows:

One 20 inch by 8 foot bed instantaneous change gear engine lathe, with three-step cone and double back gear, complete with usual attachments, countershaft and taper attachment; one No. 1 nut facing machine, with a range of 1¼-inch nuts and under, with extra mandrels; one keyway cutting machine; one 76-inch boring and turning mill, with one plain and one swivel head on cross rail, machine to be belt driven; two 3 x 36 inch flat turret lathes, complete with chucking outfit; one turret head bolt cutter, complete with dies from ¾ inch up; two 5½ x 10 inch semiautomatic chucking and turning machines, with outfit of tools; two 36-inch rapid production vertical turret lathes, with one turret swivel head on cross rail and one swivel head on side housing; one radial drill, plain, motor driven; one 14 inch by 3 foot engine lathe, back geared, belt driven; one 16 inch by 3 foot engine lathe, back geared, belt driven; three 20 inch by 5 foot engine lathes, single back geared, motor driven; one 20 inch by 8 foot engine lathe, single back geared, motor driven; one 26 inch by 8 foot engine lathe, single back geared, motor driven; one 24-inch vertical drilling machine, belt driven, with compound table 24 x 24 inches, travel of spindle 9 inches; one combination automatic saw and dado machine; one No. 4 special extra heavy self feed rip saw table; one No. 5 special extra heavy self feed rip saw table; one edge molding and shaping machine, iron table; one standard pattern makers' lathe, 14-foot bed, 10 feet 4 inches between centers, 25 and 50 inch swing; one single 6-inch pipe cutting and threading machine; four No. 7 Champion power hammers; one No. 10 planer and matcher; one 1500-pound drop hammer; one 1½-inch double pipe cutter, for ¾ to 1½ inch nipples; one set No. 2 patent bending rolls; one No. 4 combined punch and shear; one No. 2 bolt heading machine; one 18-inch crank shaper; one heavy smoothing and finishing machine; one heavy vertical mortising machine, complete with clamp table rack and pinion feed and boring attachments; one pipe cutting machine, to cut pipe from 6 to 12 inches; one No. 1 improved plain radial

drill; one No. 16 back geared shaper; one 42-inch drill press, motor driven; one No. 2 automatic cut off saw, one No. 5 plain milling machine, one motor driven horizontal punching machine, two portable riveting forges, two long stroke pneumatic hammers, three short stroke pneumatic hammers, one flanging clamp, one angle iron shear, one double punch and shear, one power driven bending rolls, one vertical square shearing machine, two portable heaters and fire kindlers, one staybolt nipper, one vertical punching machine.

Plans have been completed by the Brooklyn Rapid Transit Company for making extensive improvements at its East New York yards at Fulton street, Jamaica avenue and Broadway, Brooklyn, N. Y., where the company is planning the expenditure of about \$1,000,000. At that point greatly improved facilities for repairing and taking care of cars are to be provided by a double system of tracks one above the other and the erection of large buildings. The main repair shop will be a two-story building, 70 x 350 feet, with an inspection shed on one side 110 feet wide, running the entire length of the building. Other buildings will include a power house, paint shop, oil house, &c. On one side of the yards will be constructed a strong retaining wall, which will support the upper deck of tracks from which cars will be run into the second story of the repair shop, and from these lowered down by elevator to the first floor where the heavy machinery will be installed. Thence they can be run out on the surface tracks. The shop will be equipped with modern machinery, including many wall cranes and a 50-ton electric traveling crane. The 50-ton crane will cover half the width of the shop, and will run the entire length of the building. A power plant of about 250 horse-power capacity will be required to operate the machinery. In the yards which will be equipped with the latest devices for the economical and rapid handling of cars there will be installed a \$20,000 electric interlocking plant. As work is to be started this summer it is expected that the company will soon prepare the specifications for the necessary machinery, none of which has as yet been purchased. The only contract thus far placed is that for the structural steel, which will be furnished by the American Bridge Company. The Brooklyn Rapid Transit Company which some time ago placed contracts for several steam turbines, has changed its order with the Westinghouse Electric & Mfg. Company for one 5500-kw. to two 7500-kw. turbines. These turbines will be installed in the Kent avenue power station, one at the time of delivery specified in the first order and the other one later.

Shop No. 2 of the New York Central Railroad's plant at Albany, N. Y., is undergoing a renovation and the company is purchasing motors at its New York office which are to be installed to drive the machines. Some motors have already been installed and it is planned to have motor driven machinery throughout the shop. The company has put in operation the power house recently constructed in connection with the plant.

Extensive improvements in connection with the supply of water for use in its locomotives are to be made by the Baltimore & Ohio Railroad, which has authorized the construction of a system between Connellsville and Pittsburgh, Pa., where several water softening plants are to be established at a cost of something like \$150,000.

### Pratt Institute's Machinery List.

The Pratt Institute, Ryerson street, Brooklyn, N. Y., is in the market for large quantities of machinery to be installed during the summer when the new building to be added to the department of science and technology is to be opened. The new structure is a four-story brick building, 133 x 145 feet in the rear and 55 feet in the front, and it is planned to widen the scope of the department. The present carpenter shop of the institute is to be moved into the new building, and the present machine shops will be doubled in size and brought up to date in every respect. Although some machines have been purchased, a large majority have not been entirely settled upon as yet, and the institute is in the market for considerable mechanical equipment. In all about 48 new machine tools will be added to the shop equipment. All of the larger machines will be operated by direct connected motors and others will be run by the group system, several machines being operated by one motor. About 22 engine lathes will be bought as well as three milling machines, planers, a boring mill, cylinder, universal and surface grinders, radial drills, vertical drill presses and sensitive drills. One shaper has been purchased from Gould & Eberhardt, Newark, N. J., and another is to be bought. A complete wood working outfit will be purchased, including 36 pattern workers' lathes, 24-inch surface and other planers, 16-inch jointer, 24-inch universal saw table, swing saw, cut-off saw and two band saws, besides a small cabinet saw and a jig saw. Most of the wood working machinery will be run by direct connected motors. At present it has been decided to purchase 12 motors from 1 to 10 horse-power. Later on the institute will inaugurate a department of industrial manufacturing chemistry, and machinery will be purchased for complete manufacturing outfits of a small but practical size in order that demonstrations can be made in methods



of manufacture, such as sugar refining, starch making and the like. Inquiries are now being sent out to the trade for the machinery needed, and the purchasing is to be done by Arthur L. Williston, head of the Department of Science and Technology. It is Mr. Williston's purpose to select machines of different types, some to demonstrate the most exact and accurate styles of manufacture and others for their rapidity of production rather than nicety of detail. The machinery will be used for the practical instruction of mechanical and electrical classes. Classes of journeymen mechanics will be taught and day classes for machine shop foremen will be instituted.

#### Tunnel and Canal Work.

The work of constructing the two tunnels for the Pennsylvania Railroad from the East River to the station at Seventh avenue in Thirty-second and East Thirty-third streets, the contract for which has been awarded to the United Engineering & Contracting Company, with offices in the Park Row Building, New York, is to be begun within a few days. The undertaking is one of more than ordinary interest in consideration of the fact that most of the tunneling will be done through solid rock. The contracting company has a well equipped contractor's plant, and is ready to begin operations at once. Although all the present machinery requirements have been looked after, it is expected that from time to time the company will make purchases of machinery used in rock drilling and such work. No experiments will be tried in constructing the tunnel, and the machinery to be used will be of the best of the kind recognized as being most adequate for that sort of work. The explosives to be used in blasting will be stored at the river front and remote from the scene of the construction work and the exploders will be kept wholly separate from the dynamite, thus eliminating the danger of accidental explosions.

The first work of constructing the \$101,000,000 barge canal was commenced on April 28, when steam shovels were set to work at Fort Miller in the township of Sandy Hill, N. Y. This piece of work will include the construction of a lock 400 feet long and 120 feet wide, where the artificial water way enters the Hudson River at Fort Miller and a small lock 8 miles above Fort Miller including 9 miles of digging. The contract price was \$670,497.

It is probable that the proposed trunk sewer from White Plains, N. Y., to Scarsdale, East Chester, and other places in that vicinity will soon be built. The announcement that the bill providing for its construction has passed the Legislature is one of considerable interest to manufacturers of excavating and tunneling machinery. The route of the proposed sewer will be about 15 miles long, and it will be necessary to construct a tunnel through the hills of Yonkers to the Hudson River where the disposal will be.

#### Important Machinery Needs.

A complete equipment is required by the Scullin-Gallagher Iron & Steel Company, St. Louis, Mo., which is about to erect a new steel casting plant on its property, in order to accommodate its constantly increasing business, which the company is at present unable to do with its present capacity. The company is now in the market for the buildings and equipment. The plant will consist of two all steel buildings, 75 x 400 feet each; one all steel building, 65 x 400 feet, and one all steel gas house, 48 x 200 feet. The buildings will be equipped with the most modern and up to date machinery, including four 25-ton basic open hearth furnaces, three 30-ton electric traveling cranes with 75 feet span, two 15-ton electric traveling cranes with 75 feet span, two 10-ton electric traveling cranes with 65 feet span, one charging machine, &c. All the machinery will be electrically driven, for which the company will install an 800 horse-power boiler and direct connected generator to Corliss engine. When the plant is completed it will have a capacity of 100 tons of finished steel castings a day.

A goodly number of machine tools is required by the Johnstown Foundry, Machine & Car Company, Johnstown, Pa., which is to considerably enlarge its facilities for the production of iron and brass castings, mining machinery and mine cars. The company is now in the market for 18 to 48 inch lathes, shapers, planers, drill presses, boring mill, slotters, milling machines and keyseaters.

The Lehigh Valley Coal Company is preparing to build an elaborate system of coal docks on the lake front at Milwaukee, which will cost in the neighborhood of \$175,000. A tract of land about 7 acres in area has been purchased and plans are being prepared to construct one of the largest plants of its kind in the country. Besides docks and pockets, the system will include a complete up to date coal handling plant and machinery will be required for unloading coal from vessels and conveying it to cars and pockets. The Lehigh Valley Coal Company is a subsidiary company of the Lehigh Valley Railroad, and the plant will probably be the Western terminus of the extensive lake coal routes. The company at present has no separate system of its own at Milwaukee for the unloading of its coal steamers. It controls extensive mines in the anthracite regions of Pennsylvania and operates a line of coal steamers connecting with the Lehigh Valley Railroad terminus at Buffalo and other

Lake Erie ports. The details of the construction of the coal docks and pockets are in charge of the New York office, at 143 Liberty street. It is expected that the work on the system will be begun shortly and the plant will be completed before fall. It is understood that none of the necessary machinery has been purchased as yet.

The erection of a large oil refinery in the State of Vera Cruz, Mexico, is the purpose of the Oil Refineries of Mexico Company, a newly formed corporation closely allied with the Oil Fields of Mexico Company. The latter company, the president of which is Percy N. Furber, owns a large tract of oil property situated on the Gulf of Mexico, about 100 miles from Mexico City, and for some time past the company has been producing oil in large quantities. As a result the plan to refine the oil on the property was conceived and the new company was organized, with Mr. Furber as president. Although work will not be begun on the refinery until after the next rainy season, plans are being prepared and before long orders will be placed for a large amount of machinery to be installed. It is the purpose of the company to erect a plant to refine 2000 barrels of oil a day, and later the plant may be enlarged. A power plant will also be constructed to operate the refinery. It has not been decided as yet whether steam or electric power will be used, but the power plant will necessarily be a large one and will involve a considerable expenditure alone.

The improvements which the Baum Separator & Machine Company, Manheim, Pa., is making to its plant consist of a 50-foot addition to its machine shop and a 50-foot extension to the foundry. The new machinery which the company will install will consist of a cupola, which has already been ordered; a pressure blower and several machine shop tools, including radial drills, one or two lathes, &c. The company will also require an elevator and a certain amount of trackage for the foundry. Later on a new core oven will be built.

James Austan of Hamilton, Ontario, is about to establish a tack factory and is in the market for a number of cut tack machines. He expects to make his purchases in the United States and communications should be addressed to him at 167 Rebecca street.

Work will be begun shortly on the new plant which the Simplex Railway Appliance Company of Canada, Limited, is to erect at Lachine, where a site of 45 acres has been purchased. The new plant is to be more than double the size of the present structure at St. Henri, and the plant at the latter place will be abandoned when the new one is built. The machinery in use at St. Henri will be moved to Lachine. The company will shortly be in the market for considerable equipment in the way of machine tools. All contracts will be placed by the mechanical department at St. James and Rose De Lima streets, Montreal. It is expected in the trade that the orders for new machinery will be substantial ones, as the company expects to more than double the output of the St. Henri plant. The Simplex bolsters, side bearings, brake beams and structural steel used in the construction of steel cars will be manufactured in the new plant. The New York offices are now at 42 Broadway, with the offices of the American steel foundries, which controls the business of the Simplex Railway Appliance Company in this country. Recent activities among the car builders of Canada bear out the prediction made in these columns some time ago that a merger of the car building companies of Canada is contemplated. Negotiation between the various interests are still pending, and it is said that they will soon result in something definite in the way of a merger.

The Vandyck-Churchill Company, 8 Dey street, New York, has recently secured a number of nice orders for Colburn boring mills, including a 34, 44 and 60 inch mill from the Otis Elevator Company at Yonkers, N. Y.; 53-inch mill from the New York Edison Company, New York; 34-inch mill from the Pratt Institute, Brooklyn, and a 44-inch mill from the Atlantic Coast line. Business with the company during the month of April was very satisfactory, both in its New York and Philadelphia stores, and the outlook for spring trade is very promising.

It seems about settled that Chas. M. Schwab has secured a contract from the Russian Government for a number of war ships, the particulars of which are not yet available. This contract will undoubtedly result in an increased demand for tools from the various plants controlled by the Bethlehem Corporation, as it is understood the order covers a considerable number of large vessels which will probably have to be built in several shipyards. As will be remembered, the Bethlehem Steel Corporation, which will no doubt receive the lion's share of the work, has been making very large extensions to its works at South Bethlehem, Pa., and has lately been a large buyer in the machinery market. The Harlan & Hollinsworth plants is also being enlarged. In addition to these improvements extensions to the other plants of the corporation will probably be necessary to take care of this increased work, which will likely result in the installation of a considerable amount of new equipment. Mr. Schwab has received contract for only some of the ships that the Russian Government will build in the next few years, and it is more than likely that other shipbuilders in

this country will get a chance to help carry out the Russian Government's programme for the construction of new ships.

The Lehigh Valley Railroad Company is having constructed at Sayre, Pa., a water works to be operated in connection with its machine shops, and the work of construction is in charge of J. G. White & Co., engineers, 49 Exchange place, New York. The water works complete will cost about \$50,000, and so far orders have been placed by the engineering company with the Morris Machine Works for centrifugal pumps and with Fox Brothers & Co. for tools. All the machinery for the plant, which is to be completed this summer, has not been bought as yet. The same engineering company is building a \$300,000 plant for the Wilkes-Barre Gas & Electric Company, Wilkes-Barre, Pa., which represents the recently combined interests of the electric and gas companies of that city. J. G. White & Co. has placed an order for \$60,000 worth of wrought iron pipe with the Mott Iron Works.

The railroad which was recently built by the J. G. White Company for the Manila Electric Railroad & Light Company has been completed and was put in operation last week. It is understood that more money is to be spent in extending this system. The Alton & St. Louis Railroad Company has closed a contract with the White Company whereby the latter will construct about 10 miles of railroad between Mitchell and Edwardsville, Ill. Railroad supplies will be required for constructing the road, as well as steel rails, but no machinery for the work of construction will be purchased, as the company recently completed a similar contract in the same vicinity and has machinery on hand.

#### Business Changes.

The H. W. Johns-Manville, Company, 100 William street, New York, has found it necessary to establish a number of new branches in order to facilitate the handling of its business in the Far West. The new branches are at San Francisco, Seattle, Kansas City, Los Angeles, Little Rock and Minneapolis. The company now has 18 branches in all, covering the entire United States and Europe.

The Parsons Mfg. Company moved on May 1 from 320 Broadway, New York, to larger and more commodious offices in the Barclay Building, 299 Broadway.

### New England Machinery Market.

WORCESTER, MASS., May 2, 1905.

Conditions in New England have changed but little in the past week. The entire absence of labor troubles in the metal lines, in fact the absence of all labor troubles, with some trifling exceptions, is a matter of much encouragement. Neither does there appear to be any likelihood of troubles later on. This is a very remarkable condition of affairs, as compared with previous years in these States. Either the machinists, boiler makers, structural iron workers, polishers or molders were on strike May 1 or were on the eve of it. There may be small local troubles, but they will be the exception, this condition is very encouraging to shop and factory improvements. Business is good and there is every promise that it will increase rather than decrease. The machine tool manufacturers are perhaps busier than the Boston machinery dealers, because of a demand for tools outside of New England, including foreign business.

There is considerable activity in new buildings for general industrial purposes in New England. These buildings, with power for the tenants, are very important factors in the industrial development of cities and towns, and, moreover, are generally excellent investments. Landlords of such property assert that while their returns are not large, yet they are not very much affected during times of depression of manufacturing business. Where there is a diversity of industry under one roof some tenants are always busy, and with all of them rent must go on, like house rent, even when times are hard. Investors have wakened to the fact. Rents may be pretty low, including charges for power, where electrical units are employed in the distribution of power, doing away with long lines of shafting which have been the cause of high rates for power in old fashioned buildings of this description.

For a long time there has been under consideration the construction of a canal across Cape Cod. Last week the Legislative Committee on Harbor and Public Lands at Boston, Mass., voted to report a bill incorporating the Massachusetts Ship & Canal Company with a capital stock of \$6,000,000, which asks for authority to construct and operate a ship canal across Cape Cod along what is known as the Bass River route, through the towns of Dennis and Yarmouth.

An attempt is being made to consolidate the car building industry of the country, and some of the manufacturers believe that it will be successfully carried out. No definite information is given out by the interested parties, and it is not possible to secure the full list of the companies that are included in the transaction. But it is stated on good authority that the consolidation as planned will be a very complete one, including the St. Louis Car Company, St. Louis; the J. G. Brill Company, Philadelphia; the Wason Mfg.

Company, Springfield, Mass.; the Osgood Bradley & Sons Company, Worcester, Mass.; the Laconia Car Company, Laconia, N. H., and the Jewett Car Company, Akron, Ohio. The special purpose of the consolidation is to combine the electric car manufacturing business, but at the same time much of the general car building business would be included, because the companies build both types of passenger car. The matter has not reached a point which may be considered binding, at least in some instances. But the matter has come to a place much nearer fulfillment than during either of several other attempts that have been made in the past to effect the same combination.

#### Union Twist Drill Company.

An important development of the week and one that is likely to lead to the purchase of machinery later on was the organization of the Union Twist Drill Company with a capital of \$600,000. The company, which is composed of men well known in the machinery trade, will occupy the plant of Gay & Ward at Athol, Mass., where it will continue the manufacture of twist drill and reamer cutters, and in addition will make a full line of twist drills. John A. McGregor, recently superintendent of the Morse Twist Drill & Machine Company, New Bedford, Mass., is president, and Edgar T. Ward of E. T. Ward & Son, Boston, is treasurer.

The machinery dealers are following the Watertown Arsenal, Watertown, Mass., in the belief that important requisitions for machine tools and other equipment are to be issued shortly.

Marcus A. Coolidge, Fitchburg, Mass., has purchased the entire capital stock of the Fitchburg Machine Works, and will carry on the business with the intention of putting it on a modern basis. A specialty will be made of engine lathes, including special machines as well as a standard line, the purpose being to redesign the company's machines. In addition a line of shapers will be manufactured, and special machinery will be built. It is not planned to build planers for the present at least. The shops of the company will continue at their present location, and will be rejuvenated. No list of new machine equipment is ready, the idea being to add new tools as they may be needed in the process of manufacture of machinery. The business is incorporated with a capital stock of \$60,000. Mr. Coolidge will be the president and Harry F. Allen will continue as treasurer. J. S. Richardson will remain as superintendent. He has been 25 years with the company and Mr. Allen 15 years. While Mr. Coolidge has had no connection with the machine tool business he has had much successful general business experience and is recognized as a man of large executive ability.

The Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., is to make a large addition to its plant by the erection of a brick building five stories high. The building will consist of a main portion 43 x 94 feet, the first floor to have the height of two stories and to be equipped with two light traveling cranes for conveying flasks, this portion of the building to be devoted to pattern storage. The remainder of the building will be 33 x 61 feet, the long dimension being parallel with the long direction of the other part. A part of the new space will be given over to an extension of the company's machine room.

Gray & Davis, Amesbury, Mass., manufacturers of automobile and carriage lamps, propose to add to their plant this season, but details of the extension have not been decided. The firm states that it will need new presses, speed lathes and buffing machines.

The Sullivan Machines Company, Claremont, N. H., manufacturer of mining machinery, is to erect a wood working shop and machinery building as additions to its plant. The company states that it is not in the market for anything at present.

The Sherrer-Williams Company, Boston, manufacturer of willow and rush furniture, automobile baskets and kindred lines, has bought the Miller Brothers plant, Beason street, Somerville, and will occupy it for a factory. The property consists of two brick buildings, each 40 x 110 feet and four stories. The company will require new machine equipment later on.

A number of companies whose interests are allied with the iron, steel and machinery trade have engaged offices in the Trinity Building, which is now about completed at 111 Broadway, New York. Some of the corporations have already taken up their quarters in the building, while others will move in during the month. Prominent among the concerns to locate in the structure are the Scranton Bolt & Nut Company, Rogers, Brown & Co., Niles-Bement-Pond Company, Midvale Steel Company, the Hudson Companies, which is the corporation carrying out the Hudson tunnel projects; Jacobs & Davies, the engineers in charge of the tunnels who have sublet offices in the Hudson Companies' suite; Ritter-Conley Mfg. Company, American Locomotive Company, Charles Harris and Magnus Metal Company, National Electric Company of Milwaukee, manufacturers of the Christensen air brake. Charles M. Schwab will also make his headquarters there.



## Chicago Machinery Market.

CHICAGO, ILL., May 2, 1905.

The topic uppermost in the minds of machinery dealers and builders at the present moment is the teamsters' strike and the threat on the part of the American Federation of Labor to call out every unionist in every craft, if necessary, in order to win the strike. Teamsters, machine handlers and machine riggers are very closely allied and there is a fear every moment that an ultimatum may come from labor headquarters calling out all these organizations.

A fair pick up business has been enjoyed by the machinery dealers here, but it is becoming daily more evident that the activity in manufacturing circles, as reflected in the congested condition of the mills, is not making such demands on the shops as to make necessary a very great increase in machine tool equipment. About three years ago, during the boom that existed at that time, machine users very generally put in so large a complement of machines and tools that their plants are, as a rule, in a position to meet all the requirements that are likely to be made on them for the next five years. It is becoming quite generally believed that the municipal traction interests will be large buyers of rails, cars and power and track equipment generally, but there are many obstacles to be surmounted, before these things will develop into actual orders. The plumbing, steam heating and steam fitting interests seem to be exceptionally busy and are buying tools in quite satisfactory volume. The same is true of makers of anything that goes into a building, as building operations in Chicago and the West generally are exceptionally heavy. Within the last few days, however, activity in this direction has been crippled locally by the action of the labor leaders in calling strikes on all buildings being erected by firms with whom the teamsters have their dispute.

The National Electric Company of Milwaukee has undergone a change in its management as a result of the transfer of a majority of its stock to the directors of the First National Bank of that city. The change is a direct result of the defalcation of Frank G. Bigelow, president of the bank, who owned the controlling interest in the National Electric Company, which he was compelled to assign to the directors of the bank, the stock amounting to \$400,000 par value. The change in management and officers has given the National Electric Company added stability and will undoubtedly insure its maintenance as one of the big manufacturing establishments of Milwaukee. Mr. Bigelow was chairman of the board of directors of the company; his brother-in-law, S. W. Watkins, president, and F. C. Randall vice-president and general manager. Their resignations were at once presented, as were those of all of the directors, all of which, except two, were accepted. A special meeting of the directors was held Thursday, April 27, when new officers, from the directorate of the bank, were elected, as follows: President, John I. Beggs, vice-president and general manager of the Milwaukee Electric Railway & Light Company; vice-president, J. H. Van Dyke, Jr.; directors, John I. Beggs, Charles F. Pfister, Frederick Vogel, Jr., and J. H. Van Dyke, Jr.

The resignations of A. N. McGeogh and B. T. Becker were not acted upon by the board. The new directorate, in announcing the changes, through Mr. Beggs, president, says: "The business of the National Electric Company will be actively continued and all contracts now on the books of the company promptly completed. The indebtedness of the company is now being ascertained by the new management and as soon as it is fully known a meeting of the creditors will be called to consider the best course to be pursued for the protection of all creditors and for the future welfare and progress of the company. The National Electric Company is one of the important and promising manufacturing industries of Milwaukee, employing a large force of skilled mechanics, and the new management will make every effort to preserve and increase the business of the company, believing as they do that it can be made one of the most profitable manufacturing enterprises in the city of Milwaukee."

T. & H. Smith & Co., Pekin, Ill., makers of wagons, are planning important improvements in their plant. A new blacksmith shop, 40 x 160 feet, will be built and equipped with modern appliances to be operated by electric power. Other improvements include the laying of switch tracks throughout the yards and factories.

Owing to increase in business, F. E. Pfannmueller & Co., dealers in new and reconstructed power equipment, will remove to larger quarters, and after May 1 will be located at 1134 First National Bank Building, Chicago.

The following bids were received by the Commissioner of Public Works of the city of Chicago for a 3,000,000-gallon pumping engine for the Washington Heights pumping station, together with the necessary boilers and equipment: Platt Iron Works, \$18,455; Allis-Chalmers Company, \$19,300; Laidlaw-Dunn-Gordon Company, \$19,958 and \$19,258; Snow Steam Pump Works, \$21,227 and \$21,027. Contract has not yet been awarded, but will doubtless go to the lowest bidder.

Bids also have been opened for constructing shafts and tunnel under the Chicago River at Montrose boulevard. There were six bidders, the lowest of whom was M. H. McGovern, \$14,484.11. The Department of Public Works is advertising for bids on flanged cast iron specials to be used in the 36-inch water main which will go into this tunnel. The specifications call for 28 pieces aggregating 89,250 pounds, together with a quantity of bolts and washers. Bids will close May 20.

The city of Manistique, Mich., will advertise for a water works plant and equipment as follows: A brick power house, 37 x 45 feet; a 50 horse-power gas producer; one triplex power pump of 750,000 gallons capacity and one of 500,000 gallons capacity; one 50 horse-power gas engine direct connected to the larger pump; one 35 horse-power gasoline engine direct connected to the smaller pump; an intake main and suction pipe to power house; 7 miles of cast iron main and a steel stand pipe 15 feet in diameter, 65 feet high. An alternative proposition asks for bids on a 50 horse-power and a 35 horse-power electric motor, an intake crib and gravity main from the Indian River dam 8000 feet distant and a brick or concrete reservoir, 40 feet in diameter and 8 feet deep. Geo. W. Sturtevant, Fisher Building, Chicago, is engineer in charge.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, May 2, 1905.

A review of the machinery market in this city indicates that trade is very active, and conditions are extremely favorable for a continuance of same. The past week has been productive of a number of large size orders, as well as the general run of medium and smaller ones, distributed among the makers of various tools. There appears to be an increasing demand for larger and heavier tools, and while the smaller machines are being disposed of advantageously, there is more call for those of a heavier type. The work of expansion still continues, and should the month of May prove as satisfactory as it is anticipated, there will be a more general movement in this direction, and many more of the plants will necessarily be compelled to take the same action. Prices are said to be firmly established, and what changes have been made have been for an increase rather than at a lower figure. The coming in of May has been looked forward to with some degree of uneasiness, on account of threatened strikes among several of the trades unions, but as yet the only cloud upon the horizon is the strike of the architectural iron workers, the status of which is practically unchanged. We learn, however, that the Iron League, which is composed of the several structural firms in the city, has promulgated a circular, in which it states that it will proceed at once with the work that it now has under way, and that all further conferences are at end so far as the league is concerned. This will have a tendency to cause the men to return to work at the old schedule or leave for new fields of labor. There is some conjecture as to the spreading of the strike that now has Chicago within its toils, the fear apparently being that a sympathetic movement may be the result.

The automobile industry is receiving a decided impetus in this city and the plants of this character are said to be exceedingly busy. The opening of the season was heralded by a brilliant pageant consisting of several hundred of these machines gaily decorated and presenting a magnificent spectacle.

The American Tool Works advises that business, both foreign and domestic, is of the best, and that the month of April just closed has proven to be the largest that it has known for the past three years.

The new plant of the Champion Tool Works, now being erected on Spring Grove avenue, has been somewhat delayed on account of inability to receive material promptly. This is being gradually overcome and the work is being pushed forward more rapidly. While not yet in a position to handle business, and will probably not be for the next 30 days, yet we are advised that several orders have been received and booked and that the plant will begin operations with order books fairly well covered.

The Cincinnati Milling Machine Company is finding a ready sale for its tools and is having trouble in making deliveries as promptly as it desires. The company is doing all in its power to hurry forward the new buildings in order to facilitate the handling of new tools and increasing the output of the works. We are advised that the new tools necessary to equip the additional room have been purchased.

The Bickford Drill & Tool Company reports a very satisfactory condition of business. The railroads are coming into the market more freely and the shipments to this class of buyers is quite heavy. Foreign trade is reported as much improved and increasing.

The J. M. Robinson Mfg. Company says that this is a very busy season in its line, especially as to cornice brakes. These are being gradually enlarged and made heavier to meet the requirements of the trade. Mr. Robinson, who has been the active man in the concern for a number of years, has

sold out to F. Johannigman. The name of the company will remain unchanged.

The R. K. Le Blond Machine Tool Company, in conjunction with other builders of tools, is finding no difficulty in disposing of its output.

The John A. Stewart Electric Company of this city has been incorporated with \$50,000 capital.

## Philadelphia Machinery Market.

PHILADELPHIA, Pa., May 2, 1905.

The month just closed has been generally satisfactory to the trade. There is no doubt but that considerable more business could have been transacted had it been offered, but while some portions of the month were even dull, the aggregate volume of business transacted is considered favorable under existing conditions. All through the month there has been more or less hesitancy shown on the part of buyers to close business under consideration, and at this time there are a number of good propositions still held under advisement, which, however, may develop into actual orders almost any day. While there have been no orders of any size from the various railroad companies, inquiries have been out in no small number for lots of two, three or even more tools, principally for replacement and in some cases for minor extensions. This business, on the whole, has reached quite a fair volume during the past few weeks and orders have been pretty well distributed among different dealers and manufacturers.

The demand for smaller tools seem to be somewhat weaker, but there is increased inquiry for the heavier tools. In many cases the latter are hard to get promptly, and as a rule the party making the best delivery—other conditions being equal—lands the business. Some large orders have been taken for locomotives during the past week, the local builders coming in for a good share of the business.

Manufacturers of machine tools have, on the whole, increased the volume of business on their books. Builders of the heavier types of machine tools, engines, &c., continue the most active. Cranes and conveying machinery are in good demand, and builders of these types of machinery and appliances have a large amount of work on hand.

The shipyards are becoming more active and, taken all in all, conditions seem favorable for an increased volume of business in all branches of the trade.

Foundries have experienced but little variation in conditions. Steel casting plants are, if anything, more active and have a large volume of business on hand. Gray iron foundries vary in activity according to the class of castings produced, the general jobbing foundry being probably the less active.

Bromley & Sons have inquiries before the trade for engines for their new lace mill, being erected at Twenty-second street and Lehigh avenue. Fifteen hundred horse-power will be required, and it is likely that it will be divided into two units.

The Pennsylvania Railroad Company will begin work in a few days on an extension, 86 x 174 feet, to its engine house in the yards, between Forty-eighth and Forty-ninth streets. The cost of the improvement is estimated at \$40,500.

As was announced likely in our report of last week, the Director of Public Works of the city of Philadelphia, has awarded the contract to build two ice and fire boats for the city to the Wm. Cramp Ship & Engine Building Company for \$730,000. One boat is to be delivered by December 15, and the other 15 days later.

The Murray Engine Works, through the Philadelphia office in the Bourse, have sold to Wm. H. Wittaker & Co. for their Cedar Grove mill a 500 horse-power Murray-Corliss engine. Several other good propositions are expected to be closed before long, and the general business situation with them is very favorable.

The E. H. Mumford Company, recently formed for the manufacture of Mumford molding machines, has established offices in the Harrington Building, Seventeenth and Callowhill streets. It will at present place on the market a new power ramming molding machine, which will be built for the company by Harrington & Co., after designs made by the Mumford Company. During the past month the company sold a number of machines, more in fact, than was anticipated, and inquiries are being received by it in good number.

The Standard Pressed Steel Company has during the past week shipped 200 "American" pressed steel hangers to parties in Honolulu, Sandwich Islands. It also advises us that the volume of business transacted during the past month was the greatest in the history of the company and that indications are favorable for even a larger business during the present month.

The Baldwin Locomotive Works have booked orders during the week for 50 engines for the Philadelphia & Reading Railroad. Thirty-nine of these are to be of the freight type, the remaining 11 being switching engines. An order for five switching engines was also received from the Baltimore & Ohio Railroad. The Baldwin works continue to book in ad-

dition a large number of orders for locomotives in lots of two or three, and are well pleased with the present condition of business.

The Energy Elevator Company notes quite an improvement in the demand for elevators, both of the hand and power types. Local business has increased and the company is installing quite a number of electric elevators for parties in this city. Orders for carriage lifts and passenger elevators have been received from Lancaster, Pa. A number of small elevators are being shipped to Baltimore, Md., while a large hand power lift has been shipped for delivery in Mexico. Other recent shipping points include Charlottesville, Va.; Alliance, Ohio; Canastota, N. Y., and Trenton, N. J. A special lift has also been furnished the Carnegie Library at Vineland, N. J.

The Tabor Mfg. Company advises us that the month of April was the best in point of orders received for molding machines that the company has ever had. There has been a heavy demand from foundries in the Middle West and from the New England States. A number of orders have also been received from the various railroads, and a gratifying increase in foreign business is to be noted. The company has recently concluded arrangements for the sale of its molding machines in Great Britain whereby the Pneumatic Engineering & Appliance Company, Limited, of London, England, will represent it in that territory. Among some recent orders may be included ten additional 32-inch machines of the squeezer type for the North & Judd plant of the American Hardware Corporation, New Britain, Conn.; two 14 x 16 inch power ramming split pattern machines, one 13 x 18 and a 14 x 18 inch combination machine, and an 8-inch power rammer have been ordered by McNab & Harlan, Paterson, N. J., and a 24 x 30 inch Draper-Tabor machine has been ordered by the T. B. Wood Company, Chambersburg, Pa. The Tabor Company also find an increased demand for Taylor-Newbold saws, a number of which have recently been shipped to various steel foundries and structural plants.

The Wm. Cramp Ship & Engine Building Company launched on the 27th ult. the steamship Onondaga, building for the Clyde Line. This vessel is a sister ship to the steamship Chippewa, recently launched by the Cramps, and which is also being built for the same company. The Onondaga is of the three-deck type, 283 feet long, 40 feet beam and 29 feet deep. Power will be supplied by triple expansion engines and the contract speed will be 12 knots per hour. The launch was successful in every way.

## Government Purchases.

WASHINGTON, D. C., May 2, 1905.

The Isthmian Canal Commission will soon ask bids for a number of steam pumps. The requirements will include 10 simple duplex steam pumps with a capacity of at least 500 gallons per minute and 10 boilers of suitable size for operating the pumps.

The Bureau of Yards and Docks, Navy Department, Washington, will open bids on August 26 for the construction of a coaling plant at Olongapo, P. I. This will include a plant for storing and handling coal and the installation of a water supply system.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until May 16 for a quantity of supplies for the Eastern navy yards, including motors, &c.

The following bids were opened April 24 at the office of the Isthmian Canal Commission for two portable air compressors and accessories:

Platt Iron Works, Dayton, Ohio, \$2644 for an air compressor on platform and not on special truck with wheels for moving from point to point; time, 45 days.

Chicago Pneumatic Tool Company, Chicago, Ill., \$2945.95, plus \$847.95 for special truck with wheels; total, \$3793.90.

Rand Drill Company, New York, \$3235.30.

Fairbanks, Morse & Co., New York, \$3273.73; time, five weeks.

Ingersoll-Sargent Drill Company, \$3570.50 for air compressors as called for and \$4414 for oil engines; time 10 weeks.

The following bids were opened April 24 at the office of the Isthmian Canal Commission for air compressor oil engines:

Chicago Pneumatic Tool Company, Chicago, Ill., one G. S. E. type compressor direct geared to 25 horse-power oil engine air cylinder 9 inches in diameter by 11 inches stroke, \$1450; 500 feet 1 1/4 inches galvanized wrought iron pipe, \$45; 12 1/4-inch galvanized tees, \$1.44; 12 1/4-inch galvanized iron ells, 96 cents; three 1 1/4-inch steam cocks, \$2.76; one No. 00 Boyer long stroke riveting hammer, \$75; one No. 2 Boyer clipping hammer, \$60; one No. 5 Little Giant wood boring machine, \$75; one No. 2 Little Giant drill, \$50; one air receiver, 30 inches in diameter by 6 inches high, \$55 additional.

Ingersoll-Sargent Drill Company, New York, one oil engine driving air compressor, \$2959; total for riveting hammer, clipper hammer, wood drill, metal drill hose and pipe, \$396.50; automatic self starting apparatus, \$100 additional.



Rand Drill Company, New York, one 8 x 10, type 11, air compressor, \$2473; pipe, tees, ells and brass plug cock, \$112; riveting hammer, \$72.50; clipping hammer, \$55; wood boring machine, \$57.50; air drills, \$70; air hose, \$30; total, \$2870.

Fairbanks, Morse & Co., New York City, one 22 horse-power air compressor, \$1700; riveting hammer, \$90; clipping hammer, \$72; one Little Giant drill, one Little Giant boring machine, \$90; hose and coupling, \$102.60; pipe, \$42.75; tees, 56 cents; cocks, \$2.24; total \$2208.15.

H. A. Rogers & Co., New York, one single belt driven air compressor (Laidlaw-Dunn-Gordon type known as Clayton), \$440; one riveting hammer, \$75; one clipping hammer, \$60; one wood boring machine, \$75; one Giant drill, \$90; one 25 horse-power single oil engine, \$1660; pipe, \$45.50; tees, 88 cents; ells, 40 cents; plug cocks, \$4.68; hose, 16 and 18 cents per pound.

Platt Iron Works, Dayton, Ohio, one kerosene engine air compressor, including all necessary fittings, \$2400.

The following bids were opened April 25 for supplies for the Mare Island, Puget Sound, Pensacola and Norfolk navy yards:

- Bidder 7. American Supply Company, Mobile, Ala.  
 13. Burke Electric Company, Erie, Pa.  
 14. George F. Blake Mfg. Company, New York.  
 26. Becker-Brainard Milling Machine Company, Hyde Park, Mass.  
 29. California Electrical Works, San Francisco, Cal.  
 33. Crocker-Wheeler Company, Ampere, N. Y.  
 36. A. S. Cameron Steam Pump Works, New York.  
 47. M. T. Davidson, Brooklyn, N. Y.  
 48. Drew Machinery Agency, Manchester, N. H.  
 53. Electric Machinery Company, Minneapolis, Minn.  
 68. General Electric Company, Schenectady, N. Y.  
 70. Globe Engineering Company, San Francisco, Cal.  
 83. Holtzer-Cabot Electric Company, Brookline, Mass.  
 90. Handlan-Buck Mfg. Company, St. Louis, Mo.  
 95. Hallidie-Henshaw-Bulkley Company, Seattle, Wash.  
 102. Thomas Kells Sons Company, Brooklyn, N. Y.  
 120. Manning, Maxwell & Moore, New York.  
 133. Niles-Bement-Pond Company, New York.  
 143. Platt Iron Works Company, Dayton, Ohio.  
 148. Rochester Electric Motor Company, Rochester, N. Y.

155. Pacific Tool & Supply Company, San Francisco, Cal.  
 181. Sprague Electric Company, New York.  
 191. Tatum & Bowen, San Francisco, Cal.  
 195. Thresher Electric Company, Dayton, Ohio.  
 197. United Marine Supply Company, New York.  
 208. Warren Steam Pump Company, New York.  
 Class 8. One 8 horse-power slow speed shunt wound electric motor—Bidder 13, \$265; 29, \$190; 53, \$250; 68, \$261; 70, \$306 and \$396; 83, \$350; 95, \$270; 148, \$269.75; 181, \$250; 197, \$284.

- Class 18. One sliding bed gap lathe—Bidder 48, \$1448; 90, \$1325; 95, \$611.05; 120, \$800; 133, \$1155; 102, \$954.30.

- Class 19. One No. 0 plain milling machine, belt driven—Bidder 26, \$316; 48, \$393.65; 95, \$364.60; 155, \$420; 191, \$395; 102, \$323.75.

- Class 27. Two 20 horse-power 220 volt shunt wound motors—Bidder 13, \$862; 29, \$780; 33, \$967 and \$803; 53, \$990; 68, \$826; 70, \$1035; 83, \$1050; 148, \$970; 181, \$880; 195, \$820.

- Class 172. A vertical submerged tubular boiler with all necessary fittings—Bidder 7, \$675.

- Class 173. One vertical duplex pump and one vertical simplex pump—Bidder 14, \$1294; 36, \$1045; 47, \$1144; 143, \$1345; 208, \$1290.

- Class 174. One simplex vertical pump—Bidder 14, \$748; 36, \$840; 47, \$655; 143, \$805.

Under bids opened April 11, for machinery for the Eastern navy yards, the following awards have been made:

Hilles & Jones Company, Wilmington, Del., class 4, one electric motor drive outfit, \$795.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 6, one double head bolt cutter, \$460.

Walter H. Foster Company, New York, class 8, one electrically driven pipe machine, \$1650.

Charleston Machinery & Mfg. Company, Freemansburg, Pa., class 9, two pipe bending machines, \$360.

Ingersoll Milling Machine Company, New York, class 11, one motor drive outfit for horizontal milling machine, \$1018.

Niles-Bement-Pond Company, New York, class 12, six 16-inch screw cutting lathes, \$2538; class 15, two 24-inch screw cutting lathes with 16-foot bed, \$1940; class 17, one 30 x 60 inch gap engine lathe, with 15-foot bed, \$2575.

Prentiss Tool & Supply Company, New York, class 13, three 18-inch screw cutting lathes, \$1617; class 14, four 20-inch screw cutting lathes, \$2600.

Manning, Maxwell & Moore, New York, class 16, two 30-inch by 20-foot screw cutting engine lathes, \$2750.

Hendey Machine Company, Torrington, Conn., class 18, one 16-inch tool room lathe with 6-foot bed, \$730.

Burke Electric Company, Erie, Pa., class 50, two direct current electric motors, \$731.

## PERSONAL.

The recent resignation of J. R. Phillips, district manager in the Pittsburgh district for the American Sheet & Tin Plate Company, has necessitated some changes among the company's operating officials, which have been made as follows: T. C. Stevenson, formerly district manager of the Valley district, succeeds J. R. Phillips as district manager of the Pittsburgh district. Ernest L. Cronmeyer, assistant superintendent of the National Works at Monessen, succeeds E. T. Weir as superintendent of the Monongahela works. George C. Stone, superintendent of the Star Works, Pittsburgh, is transferred to the Monongahela works, to succeed D. M. Weir. U. S. Smiley, chief clerk to J. R. Phillips, becomes assistant superintendent of the National Works at Monessen, and J. E. Stevenson becomes chief clerk to T. C. Stevenson, appointed manager of the Pittsburgh district.

Wm. Howard Cole, who has been connected with the Goldschmidt Thermit Company, Wall Street Exchange Building, New York, in the capacity of chief engineer for the past nine months, has resigned his position and leaves for Europe in order to pursue professional work in connection with the electrical tramways.

R. F. Kelker, Jr., has taken up the position as engineer for the Goldschmidt Thermit Company, and will superintend the street railway department. Mr. Kelker was lately connected with the Brooklyn Heights Railroad as assistant engineer.

Geo. L. Reis, vice-president and general manager of the Lackawanna Steel Company, with headquarters at Buffalo, has resigned.

Charles D. Rhodes has resigned the position of general sales agent of the same company, owing to continued ill health, but he will retain his connection in an official capacity to be determined later. Mr. Rhodes is succeeded by H. Sanborn Smith, vice-president and general manager of the National Steel & Wire Company, New Haven, Conn.

A. S. Mitchell of the sales staff of the American Bridge Company has been appointed general manager of the sales department of the Eastern Steel Company.

George H. Brown, former master mechanic at the Chicago, Milwaukee & St. Paul Railroad shops in Dubuque, Iowa, has been appointed superintendent of the Hicks Locomotive Works, at Hegewich, a suburb of Chicago.

At a meeting of the directors of the American Smelting & Refining Company on April 27 Karl Eilers was elected a director to fill the vacancy caused by the resignation of H. L. Terrill.

The French Government has designated M. Guerard as the French member of the Board of Consulting Engineers attached to the Isthmian Canal Commission. M. Guerard is one of the French Government engineers, being "Inspecteur-Generale des Ponts et Chaussees." He was formerly engineer-in-chief of Marseilles harbor.

F. C. Myers, late manager of the Indiana Foundry & Machine Company, South Bend, Ind., has accepted the position of superintendent of the Illinois Foundry & Engineering Company, Granite City, Ill., whose shops have undergone a thorough change, with increased capacity for handling gray iron foundry work of all sizes up to 5 tons.

Col. Lewis T. Brown of Pittsburgh, formerly superintendent of the Upper and Lower Union Mills of the Carnegie Steel Company, has returned to Pittsburgh from a long trip abroad. Colonel Brown has been prominently mentioned as Mayor for Greater Pittsburgh.

H. M. Wharton, for some years engineer of works of the Westinghouse Electric & Mfg. Company, has resigned to accept a position as one of the chief designing engineers for the Allis-Chalmers Company of Milwaukee.

No. 1 stack of the Carnegie Steel Company, at the Ohio works, Youngstown, Ohio, which went out of blast about a month ago on account of a bad slip, has been repaired and started up.

## New York Pig Iron Warrant Market.

The tone of the Pig Iron warrant certificate market was considerably stronger the past week, there being a much greater activity displayed by purchasers. Sales of 2000 tons were made on the New York Produce Exchange, of which 100 tons, Foundry, were sold at \$16.50, July delivery. Other transactions include 1000 tons, May, at prices ranging from \$15.80 to \$15.95; 700 tons, June, from \$16 to \$16.10; 100 tons, July, \$16.05, and 100 tons, February, \$16.50.

The following prices were established on call Wednesday noon:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash .....	\$15.80			
May .....	15.80	\$16.00	\$16.25	\$16.75
June .....	15.80	16.00	16.25	16.75
July .....	16.00	16.10	16.25	16.75
February .....	16.00	16.15	16.25	16.75

The American Pig Iron Storage Warrant Company reports the following stock of Pig Iron in warrant yards as of April 29:

	Tons.
Stock on hand April 1 .....	69,250
Received during April .....	5,700
Total .....	74,950
Delivered during April .....	2,600
Stock on hand April 29 .....	72,350

## The Frick Coke Company Buys Hecla.

Last week the H. C. Frick Coke Company bought the entire interests of the Hecla Coke Company, which consisted of 1695 acres of coal lands and 1072 coke ovens, all in the Connellsville region. The Hecla Coke Company had three works—No. 1 with 272 ovens, No. 2 with 500 and No. 3 with 300 ovens, the latter works being completed last year. It had a capacity for turning out about 2200 tons of coke per day, and the report that the Frick Company had been securing the output for some time is untrue, as that company has not bought any coke from the Hecla Company since 1902. The Frick Coke Company owned prior to the purchase of the Hecla Coke Company 16,240 ovens in the Connellsville region proper, and with the purchase of the 1072 Hecla ovens now has 17,312 ovens in the Connellsville region, and is building 1000 new ovens, consisting of three works, one at Dunbar and two at Georges in Fayette County.

The Frick Company also owns a half interest in the Hostetter-Connellsville Coke Company, which has 705 ovens in the Connellsville region. The company also buys the surplus product of the Oliver & Snyder Coke Company, and in addition owns 2248 ovens in the Klondike, or Lower Connellsville, region, which it secured through purchase of the United States Steel Corporation of subsidiary interests of the American Steel & Wire Company and Illinois Steel Company. These consist of the Buffalo Works, 400 ovens; Footdale Works, 400 ovens; Leckrone Works, 516 ovens; Edenborn Works, 500 ovens, and Lambert Works, 432 ovens. The Frick Coke Company also has completed and under erection 2170 ovens in the Tug River district in West Virginia, and has a daily capacity for making about 40,000 tons of coke. At present it is operating 99 per cent. of its coke ovens, and shipped in March 1,028,000 tons of coke.

The Braeburn Steel Company, Pittsburgh, has established a branch warehouse in Chicago at the northwest corner of Lake and Des Plaines streets, and has moved its Chicago office from 154 Lake street to the new quarters. Racks and floor space in the new warehouse are sufficient to store 200 tons of tool steel. The forge shop of Arthur J. O'Leary & Son occupies the basement of the building and the machine shop of the same firm adjoins it, thus providing facilities for such jobbing work as is usually called for in connection with the sale of tool steel. J. W. Copeland, for the last four years in the railroad supply business in Denver, Col., has been placed in charge of this branch. Mr. Copeland, previous to his business career in Denver, had for a number of years been in the machinists' and railroad supply business in St. Paul, Minn., and his success in the sale of Braeburn high speed steel at both the points named led to his selection for the Chicago managership.

## Iron and Industrial Stocks.

NEW YORK, May 3, 1905.

The depression, which was quite severe at the time of our last week's report, continued until Monday of the present week. It was marked by tremendous liquidation, caused by pools in various stocks being compelled to throw over their holdings for the purpose of lightening their loads. The acute point in some stocks was reached on Saturday and in others on Monday. The following are the lowest points touched by the most active stocks: Allis-Chalmers common 14½, preferred 52; Can common 11½, preferred 68; Car & Foundry common 32½, preferred 95; Locomotive common 45, preferred 113½; Steel Foundries common 13, preferred 52½; Cambria Steel 25½; Colorado Fuel 41; Crucible Steel common 10¼, preferred 62; Pressed Steel common 36, preferred 92¼; Railway Spring common 33, preferred 96; Republic common 16½, preferred 70½; Sloss-Sheffield common 80; Tennessee Coal 78; United States Cast Iron Pipe common 29, preferred 92; United States Steel common 30¼, preferred 96½, new 5's 94; Virginia Iron & Coal common 40½. The liquidation ran its course on Monday, and a buying movement then set in induced by the comparatively low prices at which railroad and industrial stocks were then selling, and a recovery took place, which continued the remainder of that day and on Tuesday. To-day the market is somewhat lower again. Last transactions on active stocks up to 1.30 p.m. to-day were made at the following prices: Can common 12¼, preferred 71¼; Car & Foundry common 35, preferred 98; Locomotive common 47¼, preferred 115½; Colorado Fuel 44½; Pressed Steel common 38½, preferred 96½; Railway Spring common 34¼, preferred 99; Republic common 18½, preferred 73½; Sloss-Sheffield common 80½, preferred 115; Tennessee Coal 83½; United States Steel common 32¼, preferred 100¼, new 5's 94½.

The American Smelters' Securities Company will be the title of the company formed to take over the properties of the Guggenheim Exploration Company. It will have \$30,000,000 common stock and \$47,000,000 preferred stock, the latter divided into \$17,000,000 6 per cent. cumulative series A and \$30,000,000 5 per cent. cumulative series B. The American Smelting & Refining Company owns a controlling interest in the common stock and guarantees the principal and dividends of the series B stock, which is redeemable at par June 1, 1930. Announcement is made that Kuhn, Loeb & Co. have bought \$25,000,000 of the series B stock.

**Dividends.**—Star Enameling & Stamping Company, Allegheny, Pa., has declared the regular quarterly dividend of 3 per cent.

Pressed Steel Car Company has declared the regular quarter dividend of 1¼ per cent. on the preferred stock, payable May 24.

Standard Sanitary Mfg. Company, Pittsburgh, has declared a quarterly dividend of 1¼ per cent. on the preferred stock and 1 per cent. on the common, payable forthwith.

**The Pittsburgh Foundrymen's Association.**—The regular monthly meeting of this organization was held in Pittsburgh May 1, the session being a social one, a smoker being given, and the Pittsburgh foundrymen had as their guests the foundry foremen, foremen pattern makers and foremen core makers. W. H. McFadden was in the chair and F. H. Zimmers was the secretary. A programme was prepared, headed "Confessions," and a number of humorous addresses were made. J. S. Seaman, Seaman-Sleeth Company, spoke on "Inside History of the Roll Industry." A. W. Slocum, Pennsylvania Car Wheel Company, made a very humorous address, his subject being "How to Manufacture Charcoal Iron Car Wheels Without Charcoal Iron." The subject selected by B. D. Fuller, Westinghouse Electric & Mfg. Company, was "How to Operate a Foundry in a Hay Loft." W. H. McFadden, Mackintosh, Hemphill & Co., and president of the association, spoke on the subject of "Guiding the Water Wagon." Other humorous addresses were made by S. D. Sleeth, Westinghouse Air Brake Company; E. A. Kebler, Mathew Addy & Co., and D. J. Thomas, Sterrett & Thomas. A quartette was present, which furnished vocal selections between the addresses. The attendance was large.

M. A. Neeland, formerly general manager of the William Tod Company, Youngstown, Ohio, has resigned to accept a position as assistant to John Reis, who was recently appointed assistant to President W. E. Corey of the United States Steel Corporation. The duties of Mr. Neeland will be in the nature of constructing engineer.



# HARDWARE.

THE requirements of modern trade with its enterprising and progressive methods and the intense competition which exists is leading many manufacturers to the adoption of measures which have as their object not only the bringing of their products in an attractive manner to the attention of the retail merchant so that he may be induced to handle them, but they are aiming in many ways to aid him in selling the goods. While there is little disposition to ignore the jobber there is the recognition of the fact that the distributor of Hardware is the retail merchant, and manufacturers are more and more shaping their policy and directing their efforts with his interests and requirements in view. This does not in any way interfere with their relations with the wholesale houses, through whom in most cases a large proportion of their product passes, but with continued loyalty to the jobbers there is unquestionably greater attention than ever before given by manufacturers to the circumstances and needs of the retail houses. Many illustrations of this disposition on the part of manufacturers to facilitate the sale of their goods through the trade at large will occur to any who are in touch with the Hardware market.

A marked illustration, for example, of the tendency toward the co-operation of manufacturers with the merchant is found in the furnishing of special assortments of goods which are adapted to the requirements of the smaller merchants, enabling them to purchase a varied line in comparatively small quantities of each article. The preparation of leaflets, booklets and other printed matter for distribution by the retailer is a familiar and most useful method which might be adopted more generally. The supplying of copy or cuts for advertisements or even the electrotypes of advertisements relating to a special article or line which are ready for insertion in the columns of local newspapers is another method which is apparently coming into more general use. The circularizing of the trade is carried on to an extent which inundates the retail merchant with literature, which, as a rule, is given too scant attention. The attempt to awaken a demand through popular magazines and journals of wide circulation is another indication of the same tendency. Where a specialty is manufactured it is not an uncommon thing for those who are putting it on the market to arrange for public demonstrations or exhibits of its merit and working. In a somewhat similar spirit manufacturers send out representatives who visit the mechanics or other prospective customers, calling attention to their goods and referring them to the local Hardware merchant. The manufacturers as never before have their eyes on the retail merchant and are seeking his trade directly or indirectly and at the same time endeavoring to aid him in increasing the volume of his business in their products. They realize that in proportion as they make it easy for him to sell their goods will be the interest he will take in selling them.

This is a line of policy which, notwithstanding the extent to which these measures are now carried, will undoubtedly be adopted much more generally and with greater enterprise and resource. Some manufacturers are doing comparatively little along these lines. Much more general co-operation from those who make goods

with those who sell them is desirable, especially in the presence of the troublesome catalogue house competition. At the same time it is undoubtedly true that many retail merchants fail to avail themselves of the valuable assistance thus rendered. It is the duty of the merchant to lay hold of and make use of all these aids furnished by manufacturers and to utilize this assistance to the fullest extent in the conduct of his business.

THE IRON AGE DIRECTORY occupies a unique place in trade literature. The fact that it is distributed gratuitously to every subscriber of *The Iron Age* insures for it not only a very extensive, but thoroughly representative circulation. In its careful and detailed classification of products in the Hardware, Iron and Machinery lines it is characterized by almost absolute accuracy. The number of manufacturers advertising in *The Iron Age* and thus represented in the directory, and the wide range of products put by them on the market makes it serve for most practical purposes as a directory of the trades to which it relates. It has the further advantage of being clearly printed and well bound in convenient form suitable for desk use and ready reference. Besides its usefulness to purchasing agents of railroads, mills and factories, by whom it is constantly consulted, it is a valuable aid to Hardware merchants, as by means of it they are kept in touch with manufacturers in a multitude of lines in which they are interested. In this way a merchant, most of whose goods are purchased through the jobbers, is enabled to establish relations with manufacturers of specialties or in more staple goods of which he handles sufficient quantities to justify direct dealings. Advantageous prices are thus frequently obtained on regular stock or special purchases. A new edition of the directory will be sent to our subscribers in the near future, and we not only bespeak for it a welcome and careful study, but ask that our attention may be called to any errors or omissions which, in spite of the great pains taken in its compilation, may be discovered in it.

## Condition of Trade.

The past week has witnessed few important changes in the Hardware field, but the reports which come from both manufacturers and jobbers indicate that there is an excellent volume of business doing. This is perhaps more noticeable in the interior than in the East. Existing conditions certainly give little ground for complaint and much for congratulation. With good trade at the present time and the prospect of the continuance of prosperous conditions during the year all classes in the trade are conducting their enterprises with confidence and covering their requirements freely. The remarkable development of the South, and especially the Southwest, is one of the gratifying features of the present situation, and attention is being directed to these markets as full of promise for future business. The diversifying of their products, agricultural and manufacturing, is furnishing the basis of a new and larger prosperity, and is encouraging enterprise in connection with the extension of business interests in this field. The Hardware market shows little change in the tone of prices. Values are generally very firmly maintained and advances in various lines are from time to time announced by manufacturers. At the same time there are comparatively few lines in which difficulty is experienced in obtaining goods. American manufacturers are getting constantly into closer touch with foreign markets and are more and more looking abroad for an outlet for their products.

### Chicago.

Locally the teamsters' strike, which threatens to become general, is leading to a great temporary rush on the part of retail merchants to get in stocks from the jobbing houses before the threatened general tie up of all the teaming interests in the city makes delivery impossible. In this movement labor unions are going out of their way to favor jobbers who had made no attempt to deliver to the mail order house that has been the storm center of the strike and similarly to place difficulties in the way of deliveries to any part of the city on the part of jobbers who have been delivering to the mail order house in question. The city departments of the jobbing houses are working an extra force of men to take care of this temporary rush to provide against a possible contingency. Prices all along the line are none too firm, although price cutting is sporadic rather than general. In Nails and Wire goods particularly there is a disposition on the part of some jobbers—in the Southwest, particularly, it is claimed here—to force the sale of their stocks by price concessions. Warm weather in the last few days has again given impetus to Refrigerators, Lawn Mowers, Garden Hose and Fixtures, Screen Cloth, Ice Cream Freezers and other summer goods. Builders' Hardware locally is very active and the demand from the West generally is large. April, 1905, will go down into Hardware history as one of the best months on record, notwithstanding the cold weather that prevailed through such a large portion of the month.

### St. Louis.

NORVELL-SHAIPLEIGH HARDWARE COMPANY.—Nothing startling to report. Business continues satisfactory. Weather conditions are excellent. April business was better than the same month last year. Collections are very fair.

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—There is but little change in market conditions. The demand for individual consumption seems unabated. People apparently have money, and are spending it for Tools, Implements, Stoves, Household Utensils, Beds and Baby Buggies, and everything which goes to minister to the comfort of man, indoors and out, in connection with his pleasure and work. The immense production, of course, is recognized, but with the moderate prices prevailing this is not an element of danger. It can be regulated by the concerns which have the control. It is an extraordinary thing to say that 95 per cent. of the great iron and steel interest is at work producing. This was never true before in the history of the country.

The railroads are still liberal buyers, and new uses for steel and iron are constantly being developed. Wire Fencing, Poultry Netting and products of that kind seem to be unlimited in possibility of consumption. The latest novelty is the steel keg hoop. Our last barge loaded from Pittsburgh brought down the Nail kegs coopered with the new Steel Corrugated Hoops, and the condition of the packages was far superior to any we have ever received with the Wooden Hoops; in fact, the broken packages were a negligible quantity. We have never been able to say that before. A large consignment, such as comes in barges, would involve the employment of extra coopers for weeks at a time.

There are only a few disturbing factors in sight—e. g., the teamsters' strike in Chicago. It would seem as though we would never be rid of that troublesome element in that turbulent quarter. Possibly it will disappear when only automobiles are used for trucking. The writer has a theory that a certain amount of lack of self control is responsible for the absolute power which the teamster has over his horses. No one but a rarely aggressive member of the local humane society has anything to say to him when he is thrashing and otherwise abusing his horses. This lack of control often manifests itself when it comes to dealing with his fellow men. The daily use of the lash is in itself demoralizing.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade continues with but little interruption in volume as compared with two weeks ago, our last report. Several jobbers through-

out the United States have stated that March was a record breaker for that month over many years past, so that one may naturally infer this may have been general with the larger houses, which had lost some trade on account of the bad weather during the month of February. It is an old saying that trade once lost is never regained, but there are exceptions to this rule, as in the instance referred to where trade was retarded on account of the weather. The retail merchants jumped to the front to get their goods as soon as possible after the bad weather had passed. The month of April should also stand out in prominence as a record breaker when full results are arrived at.

Retail merchants largely report continued good trade, with a satisfactory outlook for the future. The stocks in the hands of the retailers are not large, and the wholesale merchants of our city are able to report their stocks in very good condition, having taken pains to arrange them to supply all requirements for the months of March and April.

Collections in the month of April are usually not quite up to the standard of the preceding month, and it has been so this year. Manufacturers of some kinds of goods continue behind their orders and are not able to make as prompt shipments as jobbers would like.

### Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—With Easter showing a temperature of 84½ degrees and following days 72 and 78 degrees, one would think that we were in the latitude of Florida, instead of being so far north as Montreal. Oregon strawberries are in the market, something unknown in the past so early in the season. All outdoor work is progressing, both in building operations and farm work, at a rate that will mean a good long rest until nature brings the work of harvesting to hand. Prospects are bright in the country, owing to forwardness of crops and in the city due to the practical completion of work for Lewis and Clark Exposition, assuring for once the opening of a completed Exposition on the day set, June 1. The rate of one fare for the round trip from the Atlantic Coast to the Pacific Coast, which has been named by the Transcontinental roads, assures us an attendance that was not dreamed of when the Exposition idea was first entertained. The Northern Pacific Railroad issued 5000 more pamphlets advertising the Exposition than was first intended; the issue is already exhausted and 20,000 additional copies ordered, showing the wide interest taken in the Exposition. Trade is still holding in same strong volume heretofore reported.

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The Hardware business of this locality continues to be remarkably good. All the jobbers are unusually busy and orders, both from salesmen and through the mail, are numerous and large. The movement in spring and summer goods is very heavy and stocks are getting pretty light on such lines as Poultry Netting, Wire Cloth, Freezers and Refrigerators. Many of the salesmen are taking future orders for fall and winter goods and the orders placed are for liberal quantities and indicate that the merchants of the South are preparing for an unusually large fall trade. Prices are very well maintained, with the possible exception of a slight weakness in Wire Nails. Collections are very satisfactory.

### Cleveland.

THE W. BINGHAM & Co.—The volume of business in the Hardware line from Cleveland for the month of April has been immense, and will far exceed the trade of last year for the same month. There is a good reason for this, in view of the large and well assorted stocks that are carried by Cleveland jobbers, the fact that Cleveland is a well-known manufacturing and distributing point in the Hardware and mill supply lines; the fact that railroad companies and manufacturers are buying General Hardware in liberal quantities for new work, and are also making extensive repairs, thus requiring a large amount of Hardware in many diversified lines.

Seasonable goods are in great demand at this time and this alone should insure steady prices. Now that the early orders for spring goods have been taken care



of, the dealers are ordering quite liberally for fall supplies, such as Axes, Stove Boards, Meat Cutters and Stuffers, Coal Hods, Hand Sleds, Fodder Yarn, Sleigh Bells, &c. Collections are quite satisfactory.

NOTES ON PRICES.

**Wire Nails.**—Demand is not what manufacturers usually expect at this season, and lack of new business is attributed to the unusually large orders taken early in the season, which included the portion of the tonnage which mills usually book at this season. The stocks bought at lower prices are to a considerable extent still in jobbers' hands, and until these are moved the mills do not expect a distinct revival of business. This they have no doubt will come later. The largest as well as other manufacturers generally are holding firmly to regular quotations, failing to see any advantageous results to be obtained from cutting prices. In fact, reports point to the probability of an advance with any important increase in the volume of business, but so far as official confirmation goes these are simply reports. Official quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....	\$1.80
Carloads to retailers.....	1.85

**New York.**—Demand from nearby points tributary to this market is larger than from city merchants. Building operations have not progressed as far in the city as in the country towns. The market is firm and New York quotations are as follows: Single carloads, \$1.99; small lots from store, \$2.05.

**Chicago, by Telegraph.**—Consumption of Nails is very great, but is being taken care of so well by surplus stocks in the hands of jobbers and retailers, sometimes at somewhat reduced prices, that the mills have not yet begun to feel the effects of the splendid consuming demand. Official prices are unchanged, at \$1.95, base, in car lots to jobbers; \$2 in car lots to retailers, with 5 cents advance for less than car lots from mill.

**Pittsburgh.**—New demand for Wire Nails continues quiet, but the trade is specifying quite liberally on contracts placed some time ago. In view of the high prices of Steel and Rods and the excellent outlook in the building trades it has been felt for some time that prices of Wire Nails were too low and would stand a conservative advance. It is not improbable that within a week or ten days at the furthest the leading Wire mills will get together to consider the matter of making a moderate advance in prices, about 10 cents per keg. It is said all the leading Wire Nail mills are favorable to an advance in prices, and such action is expected by well informed parties when the mills convene. We quote: Wire Nails in carloads to jobbers, \$1.80; carload lots to retailers, \$1.85, and in less than carload lots at \$1.90, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days.

**Cut Nails.**—At a meeting of the Cut Nail Association held last week the irregularities in prices were deplored, but no reason was found for reducing official quotations. The consensus of opinion was to the effect that the raw material market did not justify any reduction in the price of the finished product. It was contended that no more Nails would be sold at a lower price and that the probabilities were that before long there would be all the business the mills could well take care of. The result of the conference was the reaffirming of former quotations for the month of May. It is the hope of the association that the result of the meeting may be the elimination of cutting prices. Quotations are as follows: Carload lots, \$1.80; less than carload lots to jobbers, \$1.85, and to retailers, \$1.95, f.o.b. Pittsburgh. Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Cut Steel Nails.

**New York.**—As a result of the meeting of the Cut Nail Association held last week, at which an effort was made to induce local jobbers to refrain from selling at less than association prices, it is hoped that regular quotations will be maintained. New York quotations are as follows: Carloads on dock, \$1.94; less than carloads on dock, \$1.99; small lots from store, \$2.

**Chicago, by Telegraph.**—The first demand for Cut Nails comes in the sizes used for shingling and flooring, and there is in some localities a shortage in these lines. In other lines the Cut Nail seller is forced, as a usual thing, to make 5 to 10 cent concessions under the Wire Nail official price to secure a sale. Steel Cut Nails are sold in car lots to retailers or consumers at \$1.90, base, and to jobbers at \$1.85, both prices being 10 cents below the official Wire Nail schedule. Iron Cut Nails made from muck bar iron are ordinarily quoted at from \$1.95 to \$2, with some makers able to secure even higher prices because of a reputation for quality.

**Pittsburgh.**—The dull demand for Cut Nails for some months has necessitated curtailing production by the mills, which did not want to make more Nails than actually required by the trade and thus overstock the market. For some time prices have been shaded about 10 cents per keg, depending on territory from which the Nails were purchased. Official prices, which are shaded about 10 cents a keg, are as follows: Carload lots, \$1.75 to \$1.80; less than carload lots to jobbers, \$1.85, and to retailers, \$1.95, f.o.b. Pittsburgh. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents per keg advance over Steel Cut Nails.

**Barb Wire.**—The spring work of farmers is employing their time and attention to such a degree that fence building is much less actively engaged in than during the preceding weeks. This has naturally curtailed demand all along the line. Quotations are unchanged as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

**Chicago, by Telegraph.**—Farmers are so busy with their spring field operations that the stringing of Wire Fence has been abandoned for the time, and there is a consequent cessation of activity in this direction. The amount of goods already purchased has been very great and it fully warranted the extremely large purchases made by jobbers and retailers at lower prices prevailing before the last advance. Prices are unchanged, as follows: Car lots to jobbers, Painted Wire, \$2.10; Galvanized, \$2.40; car lots to retailers, 5 cents higher; less than car lots, Painted Wire, \$2.25; Galvanized, \$2.55; Staples, Bright, in car lots to jobbers, \$2.05; Galvanized, \$2.35; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—Demand for Barb Wire from the farming district in the West is fairly large, but from the Eastern trade is small and disappointing. It is not unlikely the mills will get together before long and make an advance of about \$2 a ton in prices. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

**Smooth Fence Wire.**—Mills are catching up with their orders, while jobbers are disposing of their stocks. The outlook is for a continuance of a good business. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.65
Retailers, carloads.....	1.70

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized...Base	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

**Chicago, by Telegraph.**—Owing to the temporary let up in the consuming demand due to activities of farmers in other directions, the mills making Smooth Fence Wire for fabrication into Woven Wire Fencing are beginning to catch up with their orders, a condition of affairs that is cordially welcomed by wire mills. Prices are firm and unchanged, as follows: \$1.80, base, for Annealed Wire, in car lots to jobbers; \$1.85 in car lots to retailers, with

5 cents advance for less than car lots, and 30 cents premium over Annealed for Galvanized.

**Pittsburgh.**—Stocks of Wire in jobbers' hands are moving more freely and the mills confidently expect a material increase in demand in the near future. There is a strong probability of an advance in prices of Smooth Wire, as it is understood some of the leading mills favor a meeting at an early date to discuss the matter of an advance and that sentiment favors such action. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.65  
Retailers, carloads.....1.70

**Paris Green.**—The price agreement entered into by manufacturers at the commencement of the season is firmly held. The market lacks any particularly interesting features and demand remains normal. The schedule of prices made early in the season is adhered to, as given below. Quotations are as follows:

Arsenic kegs.....12 c.  
Kegs, 100 to 175 pounds.....12½c  
Kits, 14, 28 and 56 pounds.....13½c  
Boxes, 2 and 5 pounds.....13½c  
Boxes, 1 pound.....14 c.  
Boxes, ½ pound.....15 c.  
Boxes, ¼ pound.....16 c.

These prices are subject to the following differentials:  
5000 to 10,000 pounds.....1c.  
1000 to 5000 pounds.....1 c.  
500 to 1000 pounds.....1½c.  
Less than 500 pounds.....2 c.

**Window Glass.**—The American Window Glass Company, which produces machine made Glass, announced last week a reduction in price to jobbers on the first three brackets of single strength to 90 and 40 per cent. discount from manufacturers' list. This is equivalent to a net price of \$1.14 per box for first bracket B; \$1.20 per box for second bracket and \$1.26 per box for third bracket. It is understood that at this discount it would be impossible for manufacturers of hand made Glass to sell their product except at a loss, under the present wage scale. It is reported that some manufacturers of hand made Glass are offering the first three brackets, single, at from 90 and 30 and 5 per cent. discount to 90 and 35 and 5 per cent. discount, and that for large sizes 90 and 20 per cent. discount is being made. The cutting of prices by manufacturers will open the way for lower prices being made by jobbers.

**Tacks, Nails, Brads, &c.**—The Hardware price-list on Nails, Tacks, Brads, &c., dated April 1 and published in *The Iron Age* April 6, was not entirely satisfactory to certain manufacturers who declined to adopt it. With a view to correcting what were regarded as defects and to harmonize the views of all, a meeting of the manufacturers was held in New York last week, and with the changes made the list has been approved by all the manufacturers. The modifications made are principally in the extras and in the list rebates as explained below. A change was, however, made in the list prices on Tacks in pound and 5-pound papers and 10-pound wooden boxes. On these goods the April 1 list was advanced 4 cents, the list in its present form being as follows:

In Pound and 5-Pound Papers and 10-Pound Wooden Boxes.

	Ounces.	½	¾	1	1½	2	2½	3	4	6	8	10	12	14	16	18	20	22	24
Swedes Iron Tacks, cents per pound.....	431	386	336	256	201	176		161	146	136	126	121	116	116	116	116	116	116	116
Tinned Swedes Iron Tacks, cents per pound.....				601	416	311	256	216	201	181	166	161	156	156	156	156	156	156	156
Gimp and Lace Tacks, cents per pound.....				416	336	271	236	211	176	161	151	146	141	141	141	141	141	141	141
Tinned Gimp and Lace Tacks, cents per pound.....				686	496	376	316	276	236	216	211	206	201	201	201	201	201	201	201

The extras given below were also determined upon and are now in force. A change was also made in the list rebates, as Tacks, except Brass, Copper and Leather Heads packed in 25-pound boxes are subject to an abatement of 8 cents per pound from list instead of 6 cents as before, and in 100-pound kegs to an abatement of 16 cents instead of 12 cents as before. The statement of net extras and list rebates is accordingly as follows:

**NET EXTRAS.**—To be added when not otherwise specified in the list, such items to be figured from bulk list. For bulk in 5-pound wooden or pasteboard boxes add ¼ cent per pound to net price. For bulk in 10-pound wooden boxes add ½ cent per pound to net price. For bulk in 25-pound wooden boxes add ¾ cent per pound to net price. Packed in 1-pound papers add ¼ cent per pound to net price. Packed in ½-pound papers add ½ cent per pound to net price. Packed in ¼-pound papers add 1 cent per pound to net price.

Coppered Nails and Tacks take same list as Tinned.

When not otherwise specified, Tacks 6 ounces and larger and Nails 4/8 and longer, add 1 cent per pound extra to net price for tin plating and coppering.

Metallic tinning, add 3 cents per pound extra to net price.

Galvanizing and brass plating, 2½ cents per pound to net price.

**LIST REBATES.**—Tacks except Brass, Coppered and Leathered Heads packed in 25-pound boxes, deduct 8 cents per pound from list. Tacks except Brass, Copper and Leathered Heads packed in 100-pound kegs, deduct 16 cents per pound from list. Trunk, Clout and Finishing Nails packed in 1-pound papers or 25-pound boxes, deduct 2 cents per pound from list. Trunk, Clout and Finishing Nails packed in 100-pound kegs deduct 4 cents per pound from list. American Cut and Carpet Tacks have same list in pound papers, 5-pound papers and 10-pound boxes as Swedes Iron Tacks.

The following are the present list prices of Carpet Tacks, which were not given in our issue April 6 in connection with the other revised prices:

	Ounces.	4	6	8	10	12	14	16
Steel Carpet Tacks, 2-oz. papers..	150	150	150	150	150	150	150	150
Steel Carpet Tacks, 4-oz. papers..	270	270	270	270	270	270	270	270
Tinned Steel Carpet Tacks, 2-oz. papers ..	200	200	200	200	200	200	200	200
Tinned Steel Carpet Tacks, 4-oz. papers ..	370	370	370	370	370	370	370	370
Leathered Carpet Tacks, 100 count.	40	44	47	50	54	57	60	64
Leathered Carpet Tacks, 144 count.	50	54	57	60	64	67	74	

The following schedule of weights of dozedened Hardware list goods is also announced by the manufacturers:

**Schedule Weights of Dozedened Hardware List Goods.**

Ounces per dozen, including paper boxes and wrappers.

Straight wts.													Medium wts.			Light weights.						Spe'l wts.		
***													****											
Oz.	Full.	½	¾	Full	½	¾	Full	½	¾	Full	½	¾	Ass'ted papers w/out wraps.	Tinned & Cop- pered.	Carpet Tacks only.									
1...	12	6	..	11	5	..	10	4	..	..	..	..	..	..	..									
1½...	18	9	..	17	8	..	16	7	..	..	..	..	..	..	..									
2...	24	12	..	20	10	..	18	9	..	..	..	..	..	..	..									
2½...	30	15	..	27	13	..	25	12	..	..	..	..	..	..	..									
3...	36	18	9	34	16	8	32	14	6	6	..	..	..	..	..									
4...	48	24	12	46	22	10	44	20	9	6	..	..	..	..	..									
6...	72	36	18	68	32	16	64	26	13	9	22	12	..	..	..									
8...	96	48	24	90	42	20	80	33	16	12	29	14	..	..	..									
10...	120	60	30	112	53	26	100	38	18	12	33	15	..	..	..									
12...	144	72	36	136	68	31	120	44	21	15	40	16	..	..	..									
14...	168	84	42	160	78	36	134	56	24	18	..	..	..	..	..									
16...	192	96	48	184	88	42	148	64	27	18	..	..	..	..	..									
18...	216	108	54	208	98	48	160	72	..	..	..	..	..	..	..									
20...	240	120	60	230	108	50	180	80	..	..	..	..	..	..	..									
22...	264	132	..	252	124	..	190	90	..	Cut	..	..	..	..	..									
24...	288	144	..	272	132	..	200	100	..	Tacks	..	..	..	..	..									

**Uniform Weights.**—Steel Carpet Tacks.

Straight weights. Medium weights. Light weights. Special weights.  
Blued, Bright, Blued, Bright, Blued & Br't only. Tin'd & Cop'd  
Tinned, Coppered Tinned, Copp'd. A 16 oz. 2A 32 oz. only.  
A uniform 24 oz. 21 oz. Tin'd & Cop. only. 16 oz.  
2A uniform 48 oz. 42 oz. A 18 oz. 2A 36 oz. 32 oz.

**Oils.**—**Linseed Oil.**—The cold spring has resulted in building operations being commenced later than usual and in house fires being kept lighted longer, retarding house cleaning and the customary inside painting. All this has had a marked effect upon the demand for Oil. The advance of 1 cent per gallon of about ten days ago has not stimulated demand to any great extent. The

leading interest controls the larger part of the Oil and Seed, and is in a position to advance prices at pleasure. Independent crushers are not offering Oil in large lots and are not disposed to sell at present prices, as they anticipate an advance in Oil. The consumption of Oil is expected to commence late this year, but a good trade is looked for during June and July. New York quotations are as follows: City Raw, 48 to 49 cents per gallon,



according to quantity; State and Western Raw, 46 to 47 cents.

**Spirits Turpentine.**—Reports from the South are to the effect that the producers of naval stores west of the Mississippi and Alabama rivers have organized a company capitalized at \$1,000,000, and are to be known as the Turpentine Operators' Association. It is understood that the association has joined in the movement of the organization of the Naval Export Company. After various fluctuations in prices the market has settled back to last week's quotations in New York. Supplies have been light and receipts have been absorbed, being distributed in jobbing lots. The usual large buyers are only taking what they need for immediate requirements, anticipating lower prices with the incoming new crop.

## THE IRON AGE DIRECTORY.

THE complex and exacting conditions of modern business and the ever increasing number of trade articles, at first luxuries, perhaps, but soon necessities, require of principal and subordinate a more thorough knowledge of the identity of manufactures, both as to producer and product, than ever before. Proportionately as the volume and monetary value of business has increased has the ratio of gain diminished, the difference under existing conditions between profit and loss being frequently expressed in fractions of a cent per unit. This compels a successful buyer to seek quotations from as many sources of supply as the occasion warrants. For example, a keen Hardwareman of twentieth century qual-

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### The Iron Age Directory

#### Rope Transmission—

American Mfg. Co., 63 Wall St., N. Y.  
Broderick & Bascom Rope Co., St. Louis.  
Geo. B. Carpenter & Co., 1-5 Fifth Ave., Chicago, Ill.  
Case Mfg. Co., Columbus, O.  
C. V. Hunt Co., West New Brighton, N. Y.  
Ironides Co., Columbus, O.  
A. Leechen & Sons Rope Co., St. Louis.  
National Wire Corporation, New Haven, Ct.  
New York Cordage Co., 84 Wall St., N. Y.  
Phosphor-Bronze Smelting Co., Ltd., 220 Washington Ave., Philadelphia, Pa.  
Plymouth Cordage Co., North Plymouth, Mass.  
Samson Cordage Works, Boston, Mass.

#### Ropeways, Wire—

(See Tramways, Wire Rope.)

#### Rope, Wire—

Broderick & Bascom Rope Co., St. Louis.  
Carlin Machine & Supply Co., Allegheny, Pa.  
Hazard Mfg. Co., Wilkesbarre, Pa.  
A. Leechen & Sons Rope Co., St. Louis.  
National Wire Corporation, New Haven, Ct.  
New Jersey Foundry & Machine Co., 9-15 Murray St., New York.  
Phosphor-Bronze Smelting Co., Ltd., 220 Washington Ave., Philadelphia, Pa.  
Trenton Iron Co., Trenton, N. J.  
Waterbury & Co., 69 South St., N. Y.  
Williamsport Wire Rope Co., Williamsport, Pa.

#### Rope, Yacht—

Plymouth Cordage Co., North Plymouth, Mass.

#### Rosettes, Iron—

Bethlehem Foundry & Machine Co., South Bethlehem, Pa.  
John W. Clark, Albany, N. Y.  
Chas. G. Eckstein, 249 Centre St., N. Y.  
Keystone Drop Forge Works, Chester, Pa.  
Stowell Mfg. & Foundry Co., South Milwaukee, Wis.

#### Rounders, Saw—

(See Saws, Guides and Rounders.)

#### Rowlocks—

A. S. Morse Co., Boston, Mass.  
W. & J. Tiebout, 118 Chambers St., N. Y.

#### Rubber and Paper Insulated Wire—

(See Wires, Electrical.)

#### Rubber Belting, Cement, &c.—

(See Belting, Cement, &c.)

#### Rubber Covered Wire—

(See Wire, Electrical.)

#### Rubber Goods, Mechanical—

H. O. Canfield, Bridgeport, Ct.  
Whitman & Barnes Mfg. Co., Akron, O.

#### Rubber Machinery—

Birmingham Iron Foundry Derby, Ct.  
Farrel Fdy. & Mach Co., Ansonia, Ct.  
Philadelphia Roll & Machine Co., 23d St. and Washington Ave., Philadelphia, Pa.  
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

#### Rubber Rings—

(See Gaskets and Rings, Rubber.)

#### Rubber Sheets, Vulcanized—

(See Sheet Rubber, Vulcanized.)

#### Rubber Washing Machinery—

Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

#### Rubbing Beds—

F. R. Patch Mfg. Co., Rutland, Vt.

#### Rub Irons—

(See Irons, Rub.)

#### Rubs, Emery—

(See Emery Rubs for Foundry Use.)

#### Rudder Braces—

(See Braces, Rudder.)

#### Rulers, Desk and School—

Chapin-Stephens Co., Pine Meadow, Ct.  
Lufkin Rule Co., Saginaw, Mich.  
Sawyer Tool Mfg. Co., Fitchburg, Mass.

L. S. Starrett Co., Athol, Mass.  
Upson Nut Co., Cleveland, O.

#### Rules, Blacksmiths—

Lufkin Rule Co., Saginaw, Mich.

L. S. Starrett Co., Athol, Mass.

#### Rules, Board and Log—

Chapin-Stephens Co., Pine Meadow, Ct.

Lufkin Rule Co., Saginaw, Mich.

#### Rules, Boxwood—

Brown & Sharpe Mfg. Co., Providence, R. I.

Chapin-Stephens Co., Pine Meadow, Ct.

C. E. Jennings Co., 42 Murray St., N. Y.

Keuffel & Esser Co., 127 Fulton St., N. Y.

Stanley Rule & Level Co., New Britain, Ct.

Upson Nut Co., Cleveland, O.

#### Rules, Combination—

Keuffel & Esser Co., 127 Fulton St., N. Y.

Chapin-Stephens Co., Pine Meadow, Ct.

#### Rules, Draughtsmen's—

L. S. Starrett Co., Athol, Mass.

#### Rules, Flexible Folding—

Chapin-Stephens Co., Pine Meadow, Ct.

#### Rules, Hook—

L. S. Starrett Co., Athol, Mass.

#### Rules, Ivory—

Chapin-Stephens Co., Pine Meadow, Ct.

C. E. Jennings Co., 42 Murray St., N. Y.

Stanley Rule & Level Co., New Britain, Ct.

Upson Nut Co., Cleveland, O.

#### Rules, Keyseat—

Sawyer Mfg. Co., Fitchburg, Mass.

L. S. Starrett Co., Athol, Mass.

#### Rules, Log, Caliper—

Humphrey Machine Co., Keene, N. H.

#### Rules, Machinists—

Athol Machine Co., Athol, Mass.

Brown & Sharpe Mfg. Co., Providence, R. I.

Henry Dismont & Sons, Philadelphia, Pa.

C. E. Jennings Co., 42 Murray St., N. Y.

Lufkin Rule Co., Saginaw, Mich.

Massachusetts Tool Co., Greenfield, Mass.

Sawyer Tool Mfg. Co., Fitchburg, Mass.

L. S. Starrett Co., Athol, Mass.

#### Rules, Metric Steel—

Brown & Sharpe Mfg. Co., Providence, R. I.

Keuffel & Esser Co., 127 Fulton St., N. Y.

Lufkin Rule Co., Saginaw, Mich.

Sawyer Tool Mfg. Co., Fitchburg, Mass.

L. S. Starrett Co., Athol, Mass.

#### Rules, Scale and Shrinkage—

Billings & Spencer Co., Hartford, Ct.

Brown & Sharpe Mfg. Co., Providence, R. I.

Chapin-Stephens Co., Pine Meadow, Ct.

New York quotations, according to quantity, are as follows: Oil barrels, 59 to 59½ cents; machine made barrels, 59½ to 60 cents per gallon.

## RECEPTION TO SAMUEL A. BIGELOW.

A RECEPTION was tendered Samuel A. Bigelow of Boston, Mass., president of the National Hardware Association, by the Hardware Merchants' and Manufacturers' Association of Philadelphia, at the rooms of the association in The Bourse, on Friday, April 28, at 12.30 p.m. Some 50 members of the association assembled to meet Mr. Bigelow, who was introduced by Thomas Devlin, president of the association, and W. W. Supplee. The affair was of an informal nature and was followed by a luncheon, at the close of which Mr. Devlin in a few words presented Mr. Bigelow, who made a short address. W. W. Supplee, John Harbster, H. H. Roberts and John Griffiths also made short addresses welcoming the guest of the occasion.

ity, about to buy a stock of a certain standard article as staple as Nails and used everywhere, invited quotations through the medium of THE IRON AGE DIRECTORY from a number of makers. The result was that the goods in question were purchased by him at figures very much below those at which they were quoted in regular course by the jobbers with whom he dealt.

The present highly organized systems of communication and transportation, higher standard of knowledge and other forces, have developed a tense competition which has changed former business methods. The buyers' search now is constantly for more sources of supply and more opportunities to tabulate and compare prices. As the nation has grown in wealth and population, requirements for trade information have greatly increased, while from abroad buyers in greater numbers are looking to the United States, not alone for novel devices and specialties, but for standard goods. To keep pace with the demand directories are issued; some accurate, others crude, but all helpful in some degree. The most service-

able for quick results are those covering specific fields compiled by specialists.

#### Why "The Iron Age Directory" is Useful.

To meet this want in the important channels served by *The Iron Age* such a book was issued some years ago. The new edition, the ninth, is now about to be distributed. The value of the book lies in the fact that its contents are submitted to the manufacturers, whose goods are classified at each revision, annually, for their approval, so that their products may be fully and correctly represented, and its gratuitous distribution in compact form to every subscriber to *The Iron Age*. While not attempting to cover the entire manufacturing field, it covers thousands of different articles made by the 1400 advertisers using its columns, many of whom are leaders in their line.

#### Diversity of Contents.

As a source of carefully prepared information for all classes of buyers its pages are increasingly justifying the care and expense embodied in its compilation. The matter embraces a great variety of products, including metals and related lines, raw materials, machinery, instruments of precision, as well as the familiar items that constitute a Shelf or Heavy Hardware stock.

The page here reproduced shows in *fac-simile* one of the three hundred odd pages and gives some idea of the arrangement, scope and diversity of the contents. Cross references are inserted wherever helpful in locating the heading under which the information as to the manufacturers' names and addresses is given.

In one material, Wire, are given 135 subdivisions, which, with few exceptions, describe distinctive products. The multiplicity of certain articles and their makers, taken at random, is partially comprehended perhaps by a cursory glance, for example, at such headings as Drills, Lathes, Presses, Shears, Saws, Hooks, Screws, Chains, Gauges, Knives, Pumps, Scales, Grinders, Cutters, Bells, Castings, Engines, Bolts and other important commodities, all of which have been classified with great care and comprehensiveness.

#### PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.*

INTERNATIONAL SILVER COMPANY, Meriden, Conn.: Price-list copiously illustrated of 1847 Rogers Bros. Spoons, Forks, Knives, &c., showing the large and beautiful line of these goods made by the company.

A. GEISEL MFG. COMPANY, St. Louis, Mo.: Illustrated catalogue of Tinware and Galvanized Ware; also catalogue devoted especially to Mizzoura double coated steel Enamelled Ware.

GEO. S. COMSTOCK, Mechanicsburg, Pa.: Separate price-lists relating to a large variety of Mill, Mining and Farm Machinery, Blacksmiths' Tools, Saw Mills, &c.

GUDER & PAESCHKE MFG. COMPANY, Milwaukee, Wis.: Pamphlet entitled "Fishing for 1905," and showing a varied assortment of Fishing Tackle Boxes, Bait Boxes and Minnow Buckets.

THE MARKHAM AIR RIFLE COMPANY, Plymouth, Mich.: Booklet representing the King, Queen, Chicago and Prince Air Rifles and King Pop Gun.

THE HASCALL PAINT COMPANY, Cleveland, Ohio: Circular relating to Carbon Paint for use on tin, iron, felt, canvas or shingle roofs, bridges, iron or steel buildings, machinery, tanks, &c.

ANCHOR POST IRON WORKS, formerly Anchor Post Company, office and showrooms 15 Cortlandt street, New York: Catalogue No. 29 illustrating Wire and Pipe Fences, Tennis Court Fences, Fences for poultry, dogs, cattle, &c. Gates for Wire Fences and Posts, Wrought Iron Entrance Gates, Railings, House Doors, &c.

JAMES L. TAYLOR MFG. COMPANY, Bloomfield, N. J.: Revised price-list and descriptive catalogue No. 6 showing the Taylor quick adjusting, self locking screw clamps in a great variety of styles and sizes.

THE BOSTON BOLT COMPANY, 284 Franklin street, Boston, Mass.: Folder calling attention to the extensive line of the company, including a long list of Bolts, Machine and other Screws, Washers, Files, Drills, Taps, Dies, Hack Saws, Breast Drills, Wrenches, Sledges, Blacksmiths' Tools, Anvils, Pipe Rings, Hooks and Hangers, and a general line of Hardware.

H. L. BENNETT & Co., Westerville, Ohio: Catalogue showing ten sizes of hand power, cable power and screw power Stump Pullers. They are also manufacturers of Tile Ditcher, Corn Harvester, Wagons, &c.

MILLER LOCK COMPANY, Philadelphia: Illustrated catalogue and price-list of Night Latches and Dead Locks, Locker Locks, Drawer Locks, Chest Locks and a large line of Padlocks.

EMMELMANN BROTHERS MFG. COMPANY, Indianapolis, Ind.: Catalogue A illustrating and describing Combination Gasoline Soldering Iron and Blow Torch which is complete in itself, requiring no pump, platinum coils or other similar appliances.

FORT WAYNE ELECTRIC WORKS, Fort Wayne, Ind.: Illustrated catalogue devoted to Wood Fan Motors in three types—Desk, Revolving and Bracket—for direct current and alternating current 60 and 140 cycle circuits of standard voltages.

#### GRAHAM NUT COMPANY.

GRAHAM NUT COMPANY, with general offices at Pittsburgh, Pa., has just issued catalogue No. 5, relating to Hot Pressed and Cold Punched Nuts, Machine and Carriage Bolts, Coach and Lag Screws, Bolt Ends, Blank and Stud Bolts, Foundation and Bridge Rods, Turn Buckles, Cap and Set Screws, &c. The company announces the completion of its fine new plant at Neville Island, Pa.; also the completion of a new city warehouse and office building, 1317 and 1319 West Carson street, Pittsburgh.

#### THE A. C. WILLIAMS COMPANY.

ON May 1 A. C. Williams, manufacturer of Hardware, house furnishing specialties and toys, Ravenna, Ohio, was succeeded by the A. C. Williams Company, which will continue the business on the same lines which have made it so successful in the past. Mr. Williams will continue with the company as president and manager. The new corporation starts out with a business which has been in continuous operation for 61 years, during which a trade world wide in scope has been established.

#### TRADE ITEMS.

F. T. BLISH, formerly treasurer and manager of the F. T. Blish Hardware Company, South Manchester, Conn., has entered the Paint manufacturing line as secretary and general sales manager of the Success Paint Company, with main office at 48 Weybosset street, Providence, R. I. Mr. Blish will be pleased to hear from his numerous Hardware friends, who will wish him a large measure of success in his new departure.

THE HOPKINS & ALLEN ARMS COMPANY, Norwich, Conn., is sending out very attractive folders to the trade calling attention to the company's different products. The company is expecting during the summer or early fall to put on the market several new patterns of Firearms.

THE J. D. WARREN MFG. COMPANY, Chicago, is issuing a new illustrated portfolio and price-list in which oak drawer Hardware, Bolt Cases, Bases and Nail Counters and Chicago Pattern Cabinets are described and new prices given, which constitute material concessions from former figures.

YALE & TOWNE MFG. COMPANY has removed its Chicago branch from 131 Wabash avenue to much larger quarters at 90 and 92 Lake street. The new office and showrooms will be richly finished and furnished.



## TRADE WINNING METHODS. YALE & TOWNE MFG. COMPANY'S ENLARGED QUARTERS.

*This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### ADVERTISING AND SELLING HARDWARE NOVELTIES.

BY SPECIALIST.

**T**HAT there is money in Hardware novelties for the retail Hardwareman is illustrated by the experience of merchants in connection with the sale of a new Tack Puller, a stock of which they were induced by the manager of their advertising to purchase. To bring it to the attention of the public the following advertisement in larger type than here presented was prepared and published:

#### WHO DOESN'T GET MAD

trying to take up a carpet or a matting (especially a matting) with the clumsy, old-fashioned thing called a Tack Lifter? It is a bender of Tacks, a bruiser of knuckles, and a tearer of carpets and matting. Don't you stand it another minute. Bring or send us a quarter and get a Bi-Ped Tack Puller. The Bi-Ped is an all-steel tool, having two interchangeable feet, one for carpet and one for matting Tacks. The Bi-Ped pulls Tacks straight up, so that Tacks are not bent or damaged by pulling, and are as good as new. In using it, instead of having to pry the Tacks out, the claw of the Bi-Ped is pushed under the Tack, and a gentle pressure on the handles moves the lever action, forcing the plunger against the floor, and out comes the Tack—sure and straight. The tool pays for itself by the Tacks it saves. It saves time, matting, carpet and temper, and being usable for two kinds of Tacks, you get two tools for the price of one. It is the handiest tool we have, and that is the guarantee of the

At the same time the show windows were so trimmed that the working of the Tack Puller was shown, as pieces of carpet and matting attached by carpet and matting Tacks to blocks of wood were shown with the Puller in position, illustrating the exact operation of it. The advertisement appeared in the local papers, the window was in shape for efficient co-operation, and the Pullers began to go like hot cakes. This fact was woven into reading matter, and the city editors of the local papers were induced to print it free. The result is that the house has sold many dozen of the tack pullers and has orders for many to be delivered when the fresh supply shall have been received from the manufacturers. It should be mentioned, too, that this business yielded about 100 per cent. profit.

Novelties—and their name is legion—are great profit bringers when rightly managed. The customer who comes to a retail store of any kind, particularly a Hardware store, does so because he wants some specific thing. People do not “shop” around for Hardware.

#### Profit in Novelties.

They have a specific need and they seek to satisfy it. Is anything more logical than that while getting one thing, a novelty of some sort be unobtrusively put before them and an extra sale made? Salesmen do not have to ask: “Is there anything else I can show you?” when selling novelties. While waiting, a person is attracted to the novelties in sight so that they may be said to sell themselves. It is these little profits, multiplied by many sales, that make the Hardwareman's inventory showing a real pleasure.

**T**HE YALE & TOWNE MFG. COMPANY, 9-15 Murray street, New York, now has the entire first floor above the street for its executive offices, besides the street floor and basement of No. 9 for stock and storage, and part of an upper floor for its trade literature department. In this connection the generous and accommodating spirit of the Phoenix Glass Company, which cheerfully relinquished the space at No. 15 Murray street, which the Yale & Towne Company now occupy, is worthy of mention. The matter of ventilation of the offices, with the large working force, was a serious one, especially during the winter months. Henry R. Towne, president of the company, educated as an engineer, set himself to devise an adequate ventilating system, in which he has been successful. Without going into details, a large rectangular sheet metal duct was run from the front of the building to the rear, where was placed an electric motor and radiator stack. The fresh air is drawn in from the street, warmed if necessary, and returned through a similar pipe of large capacity, which, placed above the intake, reaches to the ceiling and which is pierced at frequent intervals for ventilators, so that by opening or closing all or some of the ventilators the supply of fresh air at a suitable temperature is easily controlled. Fine accommodations for the working force of both sexes have been provided in the way of lavatories, individual ventilated lockers for clothing, &c.

#### REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

*REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, and are referred to the manufacturers:*

FROM H. A. UEHREN, Aurora, Ill., who desires catalogues and price-lists relating to Shelf and Heavy Hardware, Stoves, Implements, Paints, Sporting Goods, &c.

FROM SKAGGS & GORMAN, Allen, Kan., who are successors to W. O. Skaggs in the Hardware, Stove, Implement, Paint and Sporting Goods business.

FROM JONES HARDWARE COMPANY, Richmond, Ind., which requests printed matter relative to Shelf and Heavy Hardware, Stoves, Implements, Paints, Sporting Goods, Vehicles, Mill Supplies, Plumbing Goods, House Furnishings, &c.

FROM GREGG & GREGG, Severance, Kan., who have succeeded Gaume & Gregg, who bought out S. P. Taylor's Hardware, Stove, Implement, Sporting Goods and Wagon and Buggy business.

FROM STEEL HARDWARE & LUMBER COMPANY, Bismark, Mo., which has been incorporated with a capital of \$5000 to carry on the retail business in Shelf and Heavy Hardware, Stoves, Implements, Paints, Sporting Goods, Harness, lumber, lime, cement, &c.

FROM THE SPRINGFIELD HARDWARE COMPANY, Springfield, Ohio, which will value catalogues and price-lists pertaining to Shelf and Heavy Hardware, Implements, Paints, Sporting Goods, Mill Supplies, House Furnishings, &c.

FROM JAMES T. CASE, Logan, Iowa, successor to T. C. Case & Sons in Shelf and Heavy Hardware, Stoves, Paints, &c.

FROM WILLIAM KAPLAN, Passaic, N. J., who has enlarged his store and will materially increase his stock of Shelf and Heavy Hardware, Stoves, Implements, Sporting Goods, House Furnishings, &c.

FROM ALBERT THOMPSON, who has lately opened a store at Aurora, Neb., for the sale of Shelf Hardware, Stoves, Paints, &c.

FROM J. K. LARKIN & Co., 34 Reade street, New York, wholesalers of Heavy Hardware, Contractors' Supplies, Bolt and Nut products, &c., who have within a few months opened and stocked a large store at the above address, no stock having been formerly carried.

## INLAND EMPIRE IMPLEMENT AND HARDWARE DEALERS' ASSOCIATION.

**T**HE INLAND EMPIRE IMPLEMENT AND HARDWARE DEALERS' ASSOCIATION, which was organized at a meeting in Spokane, Wash., in February last, will hold its first semiannual meeting in Spokane on June 7, with headquarters at the Hotel Spokane. This association is designed to cover all of the merchants in Hardware and Implements in the territory known in local parlance as the "Inland Empire," which embraces the country between the Snake River on the south, British Columbia on the north, the Cascade Mountains on the west and the Rockies on the east. As noted in the constitution and by-laws, "any one handling a stock of Hardware or Implements commensurate with the needs of his community is denominated a legitimate dealer in Hardware and Implements," and as such is eligible for membership in the association. The association has been organized on the same general lines as the numerous State Hardware associations, and the members hope to bring about some of the reforms which the latter have succeeded in accomplishing in whole or part. A new feature of the work of the association will be an attempt to secure a price agreement between the affiliated merchants on such articles as Wire Nails, Barbed Wire and all of the staple Implements.

### Officers.

The officers and directors of the Inland Empire Association are as follows:

**PRESIDENT,** C. L. Butterfield, Moscow, Idaho.  
**FIRST VICE-PRESIDENT,** E. E. Lucas, Davenport, Wash.  
**SECOND VICE-PRESIDENT,** Dana Child, Spokane, Wash.  
**TREASURER,** J. A. Fridaker, Spokane, Wash.  
**SECRETARY,** E. W. Evenson, P. O. Box 1062, Spokane, Wash.  
**DIRECTORS:** J. A. Hampton, Dav's Implement Company, Colfax, Wash.; L. C. Fischer, L. C. Fischer & Co., Sprague, Wash.; J. W. Johnson, Oakesdale, Wash.; A. L. Maltbie, Carpenter & Maltbie, Waterville, Wash.; J. Bauer, Ritzville Hardware Company, Ritzville, Wash.; Jno. Raymer, Reardon, Wash.; A. Z. Wells, Wells & Morris, Wenatchee, Wash.; I. C. Hattabaugh, Grangeville Implement Company, Grangeville, Idaho; E. E. Plough, Spokane, Wash.; F. T. Larrabee, F. T. Larrabee & Co., Edwall, Wash.; E. P. Dorris, Cash Hardware Store, Lewiston, Idaho; R. L. Spiker, Kamiah Trading Company, Nez Perce, Idaho; W. F. Chalenor, Palouse Hardware & Implement Company, Palouse, Wash.; E. M. Helfner, Colville, Wash.

### Charter Members.

Following are the charter members of the new association:

D. F. Anderson & Sons, Rosalia, Wash.  
 A. B. Baker & Co., Pullman, Wash.  
 Butterfield-Elder Implement Company, Moscow, Idaho.  
 Butterfield-Elder Implement Company, Culdesac, Idaho.  
 J. H. Berge, Davenport, Wash.  
 Bryant & Campbell, Pullman, Wash.  
 J. A. Bjorklund, Troy, Idaho.  
 Carpenter & Maltbie, Waterville, Wash.  
 Clarke & Eaton, Elberton, Wash.  
 Clarke & Eaton, Lacrosse, Wash.  
 J. A. Campbell, Medical Lake, Wash.  
 Carlisle & Shenk, Culdesac, Idaho.  
 Child Bros. & Day, Spokane, Wash.  
 Crosby & Parkins, Grangeville, Idaho.  
 Wm. Collard, Palouse, Wash.  
 Cash Hardware Store, Lewiston, Idaho.  
 Davenport Machinery Company, Davenport, Wash.  
 I. J. Davis, Endicott, Wash.  
 L. F. Darr, Uniontown, Wash.  
 Darby & Mowrey, Pomeroy, Wash.  
 A. Dygert & Co., Moscow, Idaho.  
 De Bolt & McCann, Coulee City, Wash.  
 Lewis Dalsal, Lewiston, Idaho.  
 Davis Implement Company, Colfax, Wash.  
 Enterprise Implement Company, Colfax, Wash.  
 Ephrata Mercantile Company, Ephrata, Wash.  
 Evans, Hooper, Burrows Company, Clarkston, Wash.  
 Elledge Bros., Spangle, Wash.  
 J. P. Ford, Pomeroy, Wash.  
 D. C. Farnsworth, Rockford, Wash.  
 L. C. Fischer & Co., Sprague, Wash.  
 R. B. Gaines, St. John, Wash.  
 Gifford Hardware & Implement Company, Gifford, Idaho.  
 Grangeville Implement Company, Grangeville, Idaho.  
 Garfield Hardware & Mercantile Company, Garfield, Wash.  
 Hayfield Bros., Farmington, Wash.  
 M. E. & E. T. Hay, Wilbur, Wash.  
 Huntley Bros., Endicott, Wash.  
 Holley, Mason, Marks & Co., Spokane, Wash.  
 Hood Bros., Johnson, Wash.

Hugh & Kunz, Almira, Wash.  
 E. M. Helfner, Colville, Wash.  
 Hopper Hardware Company, Farmington, Wash.  
 Ilo Hardware & Implement Company, Ilo, Idaho.  
 Irwin & Co., Almira, Wash.  
 W. J. Jones, Coulee City, Wash.  
 J. W. Johnson, Oakesdale, Wash.  
 King Mercantile Company, Ritzville, Wash.  
 Kamiah Trading Company, Nez Perce, Idaho.  
 Kamiah Trading Company, Mohler, Idaho.  
 James M. Kolb, Addy, Wash.  
 W. H. Kollenbom & Co., Kendrick, Idaho.  
 Lucas Bros., Davenport, Wash.  
 Linville Bros., Tekoa, Wash.  
 Lutzhoft & Denny, Reardon, Wash.  
 F. T. Larrabee & Co., Edwall, Wash.  
 Lincoln Hardware & Implement Company, Kendrick, Idaho.  
 Laber & Worby, Creston, Wash.  
 Loy Hardware Company, Fairfield, Wash.  
 Myers & Neyland, Lewiston, Idaho.  
 Mitchell, Lewis & Staver Company, Spokane, Wash.  
 Mix & Griffith, Moscow, Idaho.  
 Mockler, Miller & Mockler, Nez Perce, Idaho.  
 McGowan Bros., Spokane, Wash.  
 Moline-Bain Company, Spokane, Wash.  
 Geo. M. McDonald, Coulee City, Wash.  
 Mark Means Company, Limited, Lewiston, Idaho.  
 McCrear Bros. & Co., Kendrick, Idaho.  
 Newland Bros., Harrington, Wash.  
 Odessa Hardware & Implement Company, Odessa, Wash.  
 A. E. Powell, Spokane, Wash.  
 Palouse Hardware & Implement Company, Palouse, Wash.  
 Pleasant Valley Implement Company, St. John, Wash.  
 E. E. Plough, Spokane, Wash.  
 E. K. Parker, Princeton, Idaho.  
 C. W. Royce, Rathdrum, Idaho.  
 Jno. Raymer, Reardon, Wash.  
 E. M. Rauch, Pomeroy, Wash.  
 Henry Reiniger, Rathdrum, Idaho.  
 E. L. Scott & Co., Oakesdale, Wash.  
 James Schiewe & Co., Ritzville, Wash.  
 Schrelber Implement Company, Moscow, Wash.  
 Sprague General Supply Company, Sprague, Wash.  
 J. R. Stevenson, Pomeroy, Wash.  
 Spokane Implement Company, Spokane, Wash.  
 St. John Hardware Company, St. John, Wash.  
 G. M. Stapish, Hartline, Wash.  
 Wm. K. Sisk, Rice, Wash.  
 St. John Implement Company, St. John, Wash.  
 Stewart-Outman Hardware Company, Pullman, Wash.  
 W. H. Taylor, Latah, Wash.  
 Walls & Kindschuh, Rockford, Wash.  
 Wilmer, Dwyer, Helmer Company, Rosalia, Wash.  
 F. A. Wingate, Krupp, Wash.  
 W. L. Walker, Waukon, Wash.  
 Wenatchee Hardware Company, Wenatchee, Wash.  
 Wells & Morris, Wenatchee, Wash.  
 F. W. Woodin, Peck, Idaho.

Since the pamphlet containing the constitution and by-laws, minutes of the organization meeting and the above list of charter members was printed, 57 names have been added to the roll, making the membership now in the neighborhood of 160 houses.

### The June Meeting.

No effort is being spared to make the semiannual meeting on June 7 a very busy, profitable and pleasant one. To quote Secretary Evenson, it will be busy "because we have just organized and have much in the way of 'unfinished business' to attend to; profitable because we are going to have some talks on topics of interest to the trade—a Question Box will be used, and we expect to have a general 'get together' meeting; pleasant because we meet at the pleasantest time of the year, in the finest climate in the world, and in one of the finest cities of the country." It is hoped to take action looking to the formation of an insurance company, and also to affiliate with the National Retail Hardware Association. An attractive booklet containing the programme is under preparation and will soon be ready for distribution.

F. H. UHLRICH, who has held a responsible position with the Wiley & Russell Mfg. Company, Greenfield, Mass., has resigned, and will take a vacation before engaging in business again. Mr. Uhlrich, who was identified with the company for nearly 20 years, retains his holdings of stock.

P. A. MYERS of F. E. Myers & Bro., Ashland, Ohio, has lately been granted a patent for an improvement in Pump Jacks. This patent covers an attachment which permits of the operation of the Pump by hand, wind mill or belt power.



## SELLING SCREENS MADE TO ORDER.

**A**N increasing number of Hardware merchants are taking up the sale of Window and Door Screens made to order, and those who have conducted this department with enterprise and intelligence are more than pleased with the results, as there is a very good margin of profit connected with it. The Screen manufacturers, of course, transact most of this made to order business direct and not through the Hardware or other merchants, but that they will gladly co-operate with the Hardwareman in going after it is evident from the extracts given below from Screen manufacturers' letters on the subject. These comments also enforce the feasibility and desirability of the merchants making efforts for business in this line, and contain suggestions as to how this may be done successfully.

### An Especially Desirable Side Line.

*From Michigan Manufacturers:* This soliciting of business in made to order Screens is quite profitable to the merchant, and we find that where a Hardwareman once takes the matter up in earnest he seldom drops the work. Several Hardware merchants have sent us an average of

### No Stock and Good Profit

45 or 50 orders each season for a number of years past. A handsome model of a Window Screen and corner sections of the Screen Doors, samples of wood, finishes and kinds of Wire Cloth, together with advertising matter and order blanks, constitute the outfit. Hardwaremen naturally come in touch with people who are building, and clerks or workmen take the measurements and make the estimates usually at times when they are not especially busy at other work. This side line is especially desirable for the retail Hardware store, as it involves the carrying of no stock and yields a very respectable profit. It also gives the merchant a reputation for being in the front ranks of his business and helps his trade in a general way.

### Why Not With Builders' Hardware?

*From a Manufacturer in Vermont:* There are many live retail Hardware merchants who are selling made-to-order Screens and who have made the sale of these goods a very profitable part of their business. There is just as much reason why a retail Hardwareman should sell made-to-order Screens as there is for his selling Builders' Hardware or any other item that goes into the construction of a building and is

### Measurement Blanks Furnished.

figured out in detail. The taking of measurements for made-to-order Screens is not a difficult matter. Measurement blanks are furnished by the manufacturer and can be filled out by any clerk of ordinary accuracy. We are making a specialty of this class of work, and find that the retail Hardware merchants are very anxious to secure goods which do not require carrying of stocks and the consequent employment of capital and storage. People have been going to the retail Hardware merchant for years to purchase the ordinary stock goods. When they are ready to buy a better grade of goods, or Screens to fit their houses, they also naturally seek him.

### Good Profit if Properly Handled.

*From a Manufacturer in New York State:* We have a number of very good representatives among the retail Hardware merchants who are handling our made-to-order Screens. The business is entirely feasible, but usually requires an outside salesman who can give his attention to it in the spring of the year. The success of any retail Hardware merchant in this line of work depends entirely upon the efforts put forth. There is good profit in it if properly handled.

### A Field Worth Cultivating.

*From a Michigan Manufacturer:* We believe that it is quite feasible for up-to-date Hardware merchants to solicit orders for special Door and Window Screens. Of course the difficulty in handling special Screen goods is putting up the work satisfactorily, and

requires the services of a first-class carpenter. We do not think it advisable to leave a first-class Screen job for a tinner, plumber or clerk to put up. A party ordering

### Need of Care and Enterprise.

special Doors and Windows for a home expects that the firm he is giving the order to will put the work up in an efficient manner; therefore a Hardware merchant who desires to solicit orders for special work must hire a first-class carpenter to put the work in place. We believe the field for special work is growing larger every year. While the manufacturer naturally will get the greater part of the work to do direct from the user, we think that the Hardware merchant can do considerable business in this line and make a good profit provided it is properly handled. We encourage Hardwaremen to take all the special work that comes to them, and receive considerable orders from this source. We find that many, the majority, do not care to bother with it—that is, to take a residence or flat and Screen throughout. We get many small orders for single special Doors and small lots of Windows, but for some reason they steer shy of large jobs.

### Manufacturers Ready to Help.

*From Another Michigan Manufacturer:* Retail Hardware merchants should solicit business of this kind. It is a profitable line for them to handle. Manufacturers are ready to furnish models of Screens in whole or parts to illustrate how the goods are made, directions for measuring, &c.

## STEEL HOOPS ON NAIL KEGS.

**A**BOUT a year ago the American Steel & Wire Company began the experiment of using steel hoops on nail kegs instead of wooden ones. The first ones were made of flat hoop iron, but as it was found that these did not give the hold on the chime hoops necessary for the convenient handling of the kegs, a bead was turned on the outer edges. The bilge hoops are made with a rounded rib or corrugation through the center. The bilge hoops are machine nailed, which results in more uniformity, and machinery is now being perfected for nailing the chime hoops. The steel hoops make a package neat in appearance and the kegs are strong and well adapted for shipping, the goods being received in excellent condition. The company is equipping its nail factories as rapidly as possible with the hoop machines, and eventually the company will use steel hoops on all kegs, doing away entirely with wooden ones. As the company's annual output is 7,000,000 to 8,000,000 kegs of nails a year, this change will mean the saving of from 28,000,000 to 32,000,000 wooden hoops per year. This is an important item, as wooden hoops are becoming harder to obtain each year as lumber becomes more scarce. In time it is probable that the old style kegs, with which the trade are familiar, will be superseded by the steel hooped. Some jobbers who have received enough of the kegs to pass upon their merits are not altogether satisfied with them. Complaints are made that the chime hoops are hard on the hands, that they are apt to tear gloves, and that the hoops are difficult to nail through in other places than the original holes. It is objected too that when stacked in tiers only the bilge of the keg rests on the floor or on the underlying kegs, making the tiers less stable. Ways will no doubt be found to overcome these minor difficulties, which will probably be found to be more than compensated for by the advantages and especially the improved condition in which the kegs reach their destination.

W. H. LEVAGOOD has disposed of his interest in the Western Automatic Machine Screw Company, with which he has been connected for 33 years. In announcing his withdrawal from active business Mr. Levagood refers to the friendships which have been formed during his business career and in laying down his duties and responsibilities acknowledges his indebtedness to customers, business associates and employees with appreciative and kindly expressions.

## FACTORY COST AND BUSINESS METHODS.

### A Manufacturer's System in the Marketing of Goods.

#### Fourth and Concluding Article.

##### Missing Goods.

A notice is inclosed in each barrel, box or package similar to Fig. 16. In case the customer in unpacking and checking a shipment received finds a shortage he returns the form to the factory with answers to the questions. A form of this kind in each package opens the way

#### NOTICE! Unpack With Care.

These goods were checked and the weight of the package taken before shipment. Should a shortage appear, please make no claim on us without promptly giving the fullest particulars, and returning this sheet with answers to the following questions:

1. What was number of package? *9*
2. What was the weight of the package when received?  
*414 Gross, 24 Tare 390 Net*
3. Have you examined the package, straw or excelsior carefully to make sure that the missing articles were not there?  
*We have*
4. Are you sure that the articles were not used or taken away by some one before the goods were compared with the invoice?  
*We are sure the article was not taken away*
5. Did the box, case, cask, or package reach you in perfect condition?  
*It did*
6. Was there any evidence that the missing articles were abstracted, lost or stolen while in transit?  
*There was not*

\*N. B. - If so, your claim should be promptly made against the Transportation Company.

Respectfully

PATON, BELKNAP CO.

IRONVILLE, CONN., U. S. A.

SIGNATURE OF THE CONCERN RECEIVING GOODS

*Smith Engine Co.*

NOTE.—It is our purpose to carefully examine all goods before shipment, but it is impossible to always detect imperfections. The only guarantee that is ever given is to replace such goods as prove defective. Under no circumstances is the seller responsible for any damages beyond the price of the goods. No charges for labor or expenses required to repair defective goods, or occasioned by them, will be allowed. In case of defect notify us promptly.

Fig. 16.—Customer's Report of Missing Goods.

for an immediate claim while the matter is still fresh. Otherwise the information in most instances cannot be furnished.

#### The Entry Department.

When the entry department receives its memoranda of shipment, or skeleton bills, it takes from the cabinet all the slips called for on that day's shipment, keeping them in order as the goods appear on the factory memorandum. The goods shipped are checked off on the slips. The bills are calculated by one clerk, and the memorandum, which eventually becomes the sales book, is figured by another. The two are then compared in the regular way and the bills are mailed. The copy upon which the costs appear is placed in a binder, forming the sales book. This method of billing is a saver of time, but it also has other advantages, including the important one of having a complete record in one place.

The work of the price clerk here becomes valuable, as all the prices are easily obtained from the slips. The object of having the cost on the factory memorandum, or sales book, is to serve as a check on the amount charged the customer. Slips incomplete are replaced in the cabinet. The folio of each charge made is placed opposite

such goods on the slip. When the slips are filled complete they are filed away under the slip number.

#### If a Customer Inadvertently Wishes

an order which has already been shipped, the original order is looked up in his particular folder in the vertical letter system. From this the slip number is obtained. The slips being arranged consecutively in a cabinet provided for that purpose it is a simple matter to locate the slip. From this the folio in the sales book is obtained, and the entire data are thus found. If the customer asks for a duplicate of any invoice the charge is obtained in the usual method through the ledger.

#### Checking Freight Claims.

From the entry in the sales book freight data are obtained for use in checking freight claims. If the order is completed in one shipment a small cross is placed beside the slip number. This is done by the entry clerk when he mails the invoice. When customers put in claims for freight or deduct freight in settling their accounts the freight clerk audits them. All such deductions or claims are governed by a rule, which appears in connection with all quotations—namely, "freight claims must be made within 30 days from receipt of goods and must be accompanied by the paid freight voucher" as well as by the stamp shown in Fig. 2.

In making claims or deductions customers give as a rule the date of the invoice upon which the shipment applies. In lieu of this it can be located from the date of the way bill given on the paid freight receipt sent in by the customer. By referring to the ledger the folio is obtained, and the charge found in the sales book. The weight and number of packages are given at the bottom of the charge, also if any freight is to be allowed. The paid freight receipt is compared with this. If it is the wrong freight receipt it is returned, together with the claim and a notation to that effect. If the order is shipped complete, as indicated by the cross opposite the slip number, and does not come up to the weight requirements as stamped on the quotation, the claim is returned with accompanying reason. In case the weight given in the paid freight receipt does not agree with that given in the sales book, the duplicate bill of lading is gotten out of the vertical filing system and the difference charged to the railroad giving the receipt. The rate is checked by referring to the city guide card, Fig. 8, upon which is a record of the freight rates. If everything is found to be all right the claim is entered in the sales book and posted in the ledger to the credit of the customer.

#### In Case of a Deduction

in settlement the check is generally accepted. If the deduction is all right it is entered the same as a claim. If it cannot be accepted it is charged back. It often happens that freight is claimed on a shipment more than once. This is quickly detected. Beside each charge in the sales book is placed a stamp, Fig. 17. This is

WT.	234*	RATE	14
AMOUNT	32		
CREDITED	9/26/04		

Fig. 17.—Freight Stamp Used in Sales Book.

filled in as each claim or deduction is audited. On each claim and settlement ticket is placed a stamp with line for date and folio, which are filled in when the entry is made in the sales book. The claims and settlements are then filed away for future reference.

#### Salesman's Territory.

The concern using the system herewith described has a map showing distinctly each salesman's territory. Each salesman is designated by a color and the color is used on the map to indicate his territory. The city in which his office or headquarters is located is marked with a cross.



**Salesman's Route Sheet.**

In making up salesman's route sheets close attention is given to location of towns and the shortest way of getting from one to the other. This is important in keeping down expense. The city guide card is helpful in figuring out a trip. Route sheets are similar to Fig 18 and are

as it is by the regular reports, forms a complete record of a salesman's trips. In order to get at this quickly each salesman's name appears in an index, opposite which are given the numbers of his route sheets. The route number takes the place of the page number in the letter book.

If a salesman works for a commission or salary and

SALESMAN <i>T. J. Mills</i>					Notice: All orders and Communications must have Route No. <i>17</i>				
DATE ISSUED <i>March 1/04</i>									
DATE	STATE	HOTEL AND TOWN	FIRM	STREET ADDRESS	PURCHASING AGENT	RATE	QUOTED	ORDER	REMARKS
<i>3/5/04</i>	<i>R. I.</i>	<i>Newport Cliff House</i>	<i>Thos. Budd &amp; Co. P.P.</i>	<i>41 Nassau</i>	<i>—</i>	<i>A. B.</i>	<i>IPF 10-5 3/4</i>	<i>No.</i>	<i>Bisard</i>
<i>3/6/04</i>	<i>"</i>	<i>Worcester R. S. House</i>	<i>Kent Mfg. Co. Customer</i>	<i>231-3 St.</i>	<i>S. A. Good</i>	<i>G. H.</i>	<i>B.V. 10 1/2 IPF 15 1/4</i>	<i>Yes 2/20</i>	<i>Good</i>

Fig. 18.—Salesman's Route Sheet.

in duplicate. The original remains on file in the office. The duplicate goes to the salesman. It will be observed that all information necessary for a salesman is on the sheet. The town and hotel at which he is to stop are in one column. In the column with the firm name is a notation "P. P.," meaning probable purchaser, or customer if such. The street address and the purchasing agent's name are items of value to a salesman. The rating is a simple, private code, A signifying \$1000 capital or less; B, \$2000, &c.

It is sometimes advisable in certain cases to quote a firm before the salesman calls. A record of this quotation with the date is placed in the column for that purpose. If goods have been ordered it is so marked in the order column. If the salesman is successful in securing an order the firm name is marked with a red cross on the original route sheet in the home office. This is readily located, as the agent marks the order with the route

commission the column marked "Order" should receive the total amount of sales. This is carried forward from report to report and from route to route, so that at any time preceding a settlement the total sales are apparent.

**Notice of Salesman's Coming.**

The salesman mails a notice to the firms he is to call upon several days prior to his intended visit. This is an excellent practice, as the customer expecting him is apt to at least wait until he has a talk with the salesman before placing his order for goods.

**Distribution of Sales**

is of importance in telling just what per cent. of profit is due each department in the factory. Brass Goods, for instance, is one department, while Brass Valves is another. Each department has a number. Daily the extensions in the sales book are separated according to the different departments and posted in a book ruled for this

ROUTE <i>17</i>					SALESMAN <i>T. J. Mills</i>									
DATE <i>3/20/04</i>					TOWN <i>Boston</i>									
Firms Visited	Order	Hotel Bill	Extras	Car Fare	Traveling Expenses			Total	Amount on Hand	Balance	Mileage Book	Mileage	Balance	Remarks
					Berth	Meals	Extras							
<i>A. A. Shyrene</i>	<i>Yes</i>	<i>2.00</i>	<i>.25</i>	<i>.20</i>	<i>2.00</i>	<i>1.00</i>	<i>.25</i>	<i>5.90</i>	<i>20.00</i>	<i>14.10</i>	<i>—</i>	<i>20.00</i>	<i>500.00</i>	
<i>Russell &amp; Co.</i>	<i>No.</i>		<i>.20</i>											

Fig. 19.—Salesman's Report Sheet.

number. The sheets are arranged in a loose leaf binder numerically.

**Salesman's Report Sheets.**

At regular intervals the salesman is required to transmit a general report and expense account. Fig. 19 gives an idea of the form used for this purpose. These sheets are kept on file and are used in making up the next route sheet for that section of the country. They are also useful in comparing expenses and relative value of territory. The salesman's report sheets follow his route sheet in the binder, being in the same order as the towns visited. The total of all expenditures for the entire trip is put on the route sheet in two items, "City" and "Traveling." It is seen that the route sheet, followed

purpose, headed by the numbers of the different departments. The posting is balanced with the sales book each day. In this way it is possible to tell if any department is not paying and thus locate the leaks.

**Tracing Orders in the Factory,**

while coming really under factory management, will bear a word, owing to the close relation between this department and the order. A numerical list of all slips sent to the factory is held, showing data, and a number which is used for tracing. All outstanding orders of a firm bear this number from the time they leave the raw stock until they are shipped. Red tags are used for rush jobs. As an order goes from one department to the next the card which is attached to the stock box must go to a

clearance house, where there is located a large board with pockets for a 2 x 4 card, under different divisions, corresponding to the departments of the factory. The cards besides the trace number bear additional matter relative to the order. A new order starting in the factory is given the lowest unused tracing number.

The system outlined above is found to be of much benefit to all departments of the shop. A saving in shipping is also effected, as when one part of an order reaches a finished state, by looking at the clearance board it is easy to tell when another shipment will be through. Combining the two a freight or express charge is often saved or a carload rate is made possible.

(Concluded.)

### M. HARTLEY COMPANY.

THE M. HARTLEY COMPANY, 313-315 Broadway, New York, announces its withdrawal from the general jobbing business in Firearms, Ammunition and Sporting Goods so far as it relates to domestic trade. The company will continue to carry on an export business in these lines, as it has for many years, being now the largest house in this line exporting goods of this character, not only of its own production, but of many other leading manufacturers. The M. Hartley Company will continue to act as the sole representative and selling agent of the following named manufacturing companies, which are owned entirely by the Hartley Company interests, viz.: Union Metallic Cartridge Company, Bridgeport, Conn.; Remington Arms Company, Ilion, N. Y., and Bridgeport Gun Implement Company, Bridgeport, Conn. The M. Hartley Company will retain its present store, offices and personnel, the executive officers of which are George W. Jenkins, president; M. Hartley Dodge, treasurer; Charles M. Dally, secretary; J. M. Gaines, auditor, and William J. Bruff, general manager, the latter official being also president of the Union Metallic Cartridge Company and secretary of the Remington Arms Company.

This action of the company logically follows changed conditions, emphasizing both the great development of its manufacturing interests and decadence of the jobbing trade. As its manufacturing interests expanded it naturally as a jobber found itself often competing with other jobbers throughout the country to whom it was selling large quantities of goods.

When the business was established in 1854 it was as an importing house, jobbing to American houses Firearms, military and Masonic goods, fancy goods, Jewelry, Cutlery, Clocks and Bronzes and druggists' sundries, many of which departments, as they grew larger, were dropped, owing to the difficulty of carrying on in one concern so many diverse lines.

The founders of the house, the greatest in its line in this country and perhaps in the world, were three young men, then clerks for leading importers in the same trade. Jacob R. Schuyler and Malcolm Graham were with Smith, Young & Co. and Marcellus Hartley was with Tomes, Melvain & Co. The first location was at 19 Maiden Lane, running through the block later to 20 and 22 John street, then taking in 17 Maiden Lane, and, as time passed and the business grew, other premises adjoining or nearby. During the Civil War Mr. Hartley was commissioned a brevet brigadier-general by the United States Government and sent to Europe as its representative to buy arms and war material for its army and navy, and he in many cases bought the product of factories for long periods, not only because the Government wanted it, but to keep the Confederacy from getting it.

The firm name changed to Hartley & Graham on the retirement of Mr. Schuyler, about 1880, and about 12 years later, following the uptown movement of trade, the concern moved to its present quarters. In 1900, soon after the death of Mr. Graham, the business was incorporated as the M. Hartley Company, with Marcellus Hartley as president. Mr. Hartley died in January, 1902, and at that time was prominently identified with over 15 important financial institutions in New York, among which were banks and telegraph, insurance and trust companies, his estate being estimated at about \$20,000,000.

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## NEW ORLEANS NOTES.

(FROM A SPECIAL CORRESPONDENT.)

THE feature of the Hardware situation just now, according to the more thoughtful leaders of the trade, is the apparent emancipation of the trade from the century old bondage to the crop conditions, particularly to the cotton crop conditions, as they rule in the immediate country. The city has come to the time when its eggs are not all carried in one basket—when prosperity depends not only on good weather and good prospects in the cotton belt, good color to the cane in the sugar section, but also on the way the mills are running in the pine belt, the degree of success attending the truck farmers across southern Mississippi, the volume of trade in the Spanish Americas, and the general thrift of an increasing manufacturing and trading population in New Orleans.

The emancipation is evident, for crop conditions are not as bright as they might be in the cotton belt, and yet the volume of Hardware trade is steadily, although moderately, increasing its lead over the volume of trade current at this time one year ago. The present prosperity continues to rather agreeably surprise the Hardwaremen, because in January no such splendid season was looked forward to.

## Points of the Situation.

Locally and in domestic lines the striking phase of the situation is the boom in the market for Builders' Materials and Supplies and all Hardware used in construction work and the kindred lines of activity. This condition applies to the saw mill district, to the sugar belt, and more particularly to the city situation, where there is now current a speculative fever in real estate that would do credit to the boom towns of Texas or Kansas 10 or 15 years ago. In New Orleans there will be expended in construction work of the higher class during the next 18 months or two years fully \$12,000,000, of which the bulk will be undertaken during the present summer. From 5000 to 6000 more men than are at present employed or available in the city will have to be brought here to do the work.

All this means Hardware business, as well as general iron and steel activity. Most of this trade is prospective, for the contracts are just now being let and the work will not begin for a month or more in its full strength. Hand in hand with this is a decided increase in the sale of household goods, house fittings and furnishings and other items incidental to a sudden expansion in the population of a city, and particularly of the house occupying element of the population. To the sugar district the usual run of general Hardware has been going steadily. The millmen have recently been buying liberally of mill supplies, the long continued spring run having necessitated repairs of an expensive sort.

Implementations have continued well, although there has been a perceptible slackening in the demand from the cotton people, and the sugar farmers have almost purchased all that they can use for a long time to come. Ship Chandlery has picked up a trifle in the prospect, although this statement is comparative, the cessation of the winter business, of course, taking the greater part of the trade away. With the number of ships running in each season increasing from year to year, this summer's business will probably be better than ever in the past.

## Seeking Trade Elsewhere.

While this activity has been going on here the jobbers of the city have been energetically endeavoring to secure a greater share of the Panama business. When the purchasing agency for the Canal Commission was first established here there was constant complaint that New York and some other Eastern seaports were given constant preference over New Orleans. On several occasions it was noted that specifications for bids called for shipment via New York, not allowing the choice of either New York or New Orleans. Complaints were made, but the matter was never definitely fixed. Finally the Board of Trade, under the stimulus of the Hardwaremen chiefly, appointed a special committee to go to Washington to obtain some definite guarantee that this port would be

protected. That committee consisted of Col. B. F. Eshleman of Stauffer, Eshleman & Co., chairman; Pearl Wight of Woodward, Wight & Co.; James W. Porch of Lukens Iron Works and Thomas Sloo of Whitney & Sloo. This committee took a trip to Washington and returned last Saturday, bringing the guarantee that hereafter New Orleans would be given an even chance in the bids, and that hereafter the Panama Railroad would not be allowed to favor the Panama-New York Steamship line by giving it the right to issue through bills of lading to points on and beyond the Panama Railroad while other lines could only bill to Colon and permit the railroad to charge full rates from there on. To-morrow this committee will meet in New Orleans to take up the question of establishing an independent steamship line out of New Orleans to Panama, and perhaps the matter of taking up and revivifying the Mississippi & Orient Steamship Company project launched by the Board of Trade one year ago. The committee is anxious to have a means of communication to the isthmus that can be relied on as available to transport whatever goods and supplies may be demanded by the Canal Commission.

Meantime all the Hardware houses, profiting by the transportation facilities available, are steadily increasing their shipments to the Spanish Americas, and not a house in the city but reports a substantial increase in this business within the past two fortnights.

## UNION TWIST DRILL COMPANY.

THE business of Gay & Ward, Athol, Mass., manufacturers of Cutters, will be merged into a new corporation known as the Union Twist Drill Company, a Maine corporation with authorized capital stock of \$600,000. John A. McGregor, recently superintendent of the Morse Twist Drill & Machine Company, New Bedford, Mass., is president of the new corporation, and Edgar T. Ward of the firm of Edgar T. Ward & Sons, Boston, Mass., dealers in iron and steel, is the treasurer. The business of the new corporation will be located in the Gay & Ward plant at Athol, which is a large and modern building. The line of Milling, Twist Drill and Reamer Cutters manufactured by Gay & Ward will be continued, and in addition the new company will manufacture a full line of Twist Drills. The purpose is to add a line of Reamers later on. The company will probably be in the market for considerable new machine equipment, but the details are not yet settled.

## CHICAGO TEAMSTERS' STRIKE.

At a meeting of the Chicago Retail Hardware Dealers' Association held on the 28th ult., the following resolution relative to the teamsters' strike now afflicting that city was unanimously adopted:

*Whereas*, The general strike of teamsters has seriously affected the delivery of goods by certain of our city jobbers; and *Whereas*, We believe this to be an unjust fight, unwarranted by any provocation on the part of said jobbers or their affiliated merchants; therefore, be it

*Resolved*, That this association offer its moral support to said jobbers, in not imposing the burden of the delivery of goods during the present trouble; and be it further

*Resolved*, That we endeavor to sanction their present attitude by not discriminating by our purchases in favor of houses not so affected.

H. H. BISHOP, 10 Wade Building, Cleveland, Ohio, who is prominently known in the trade from his long connection with the McIntosh Hardware Corporation and his active identification with the National Hardware Association, of which he was at one time the president, is giving his attention to serving as commissioner of associated manufacturers. He is already representing several interests in this way, and expects to arrange to render similar service in other lines. Mr. Bishop, in his entrance on this new field, for success in which his ability and experience in the trade would seem to equip him admirably, will have the best wishes of many friends.

Frank Leish has just opened a store at Lowellville, Ohio, for the sale of Shelf and Heavy Hardware, Stoves, Implements, Sporting Goods, &c.

### TEXAS HARDWARE JOBBERS' ASSOCIATION.

THE annual meeting of the Texas Hardware Jobbers' Association adjourned April 21 after having elected the following officers for the ensuing year: James Moroney, Moroney Hardware Company, Dallas, president;

### Louvre Design.

The Williams Bros. Mfg. Company, Glastonbury, Conn., has just brought out the Louvre design in connection with its silver plated table flat ware. This line of goods, made in twenty-two different pieces, includes the



*Louvre Design.*

B. H. Brooks, Holly-Brooks Hardware Company, Paris, first vice-president; A. C. Goethe, second vice-president; R. F. Bell, Wm. Henry & R. E. Bell Hardware Company, Fort Worth, secretary and treasurer. Executive Committee: Ed S. Hughes, Ed S. Hughes & Co., Abilene, chairman; Charles Nash, Nash Hardware Company, Fort Worth; F. A. Heitmann, F. W. Heitmann Company, Houston; J. L. Taylor, Roberts, Sanford & Taylor Company, Sherman. The matter of place of holding the next annual meeting was left with the Executive Committee. The meeting was well attended and considerable interest was shown in the deliberations.

### THE IOWA ASSOCIATION.

AN interesting and effective circular letter has been issued under date April 22 by H. S. Vincent, president of the Iowa Retail Hardware Dealers' Association. In it attention is called to the work which has been accomplished by means of retail Hardware organizations, especially in connection with the catalogue house agitation, the opposition to parcels post legislation and in the matter of Hardware insurance. An earnest appeal is made to Hardware merchants who are not already members to join the association.

### The E-Z Dust Pan.

The Patent Novelty Company, Lyons, Iowa, is placing on the market the dust pan which we illustrate. It consists of a flattened conical receiver with a hinged handle. The receiver is made of one piece of sheet steel and is



*The E-Z Dust Pan.*

attractively japanned and finished. It is claimed for the pan that it avoids the necessity of stooping over, permits a full stroke of the broom without danger of sweeping the dust over and beyond the pan, and has sufficiently large capacity to hold a forenoon's sweepings without emptying.

### Trimo Monkey Wrench.

The Trimont Mfg. Company, Roxbury, Mass., manufacturer of various styles of wrenches and pipe cutters branded Trimo, has recently added to its lines the Trimo monkey wrench here illustrated. There are but three



*Fig. 1.—Trimo Monkey Wrench.*

parts to the wrench, all of which are drop forged from steel of special quality, and case hardened. The thread of both jaw and nut is rounded after the manner of the Whitworth thread, which adds materially to the life of the thread and prevents stripping or bruising from mis-



*Fig. 2.—Handle and One Jaw.*

use so as to interfere with its working. Especial attention is drawn to the fact that both jaws are forged from steel instead of having one of malleable iron. The construction of the handle is such as to give the greatest strength with least weight, there being no wood parts.



*Fig. 3.—Movable Jaw and Knurled Nut.*

It will be observed that the leverage available increases according to the size of nut, as the jaw extends forward instead of backward to engage the nut, so that the larger the nut the greater the leverage. Three sizes are now ready, 10, 12 and 15 inch, listing \$12, \$14 and \$24 per dozen.



### Goulds Field Crop Sprayer.

The Goulds Mfg. Company, Seneca Falls, N. Y., and 16 Murray street, New York, is bringing out the Goulds field crop sprayer, here illustrated. It is intended for such work as spraying potatoes, cabbages, beets, tobacco, strawberries and farm produce of kindred character. Fig. 1 shows the sprayer attached to the rear end of a farm wagon, which is accomplished by means of one

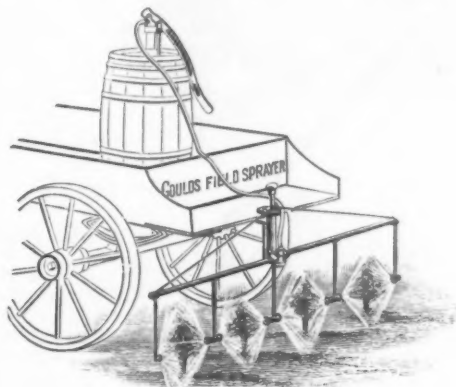


Fig. 1.—Goulds Field Crop Sprayer.

through bolt and two strong iron clamps. The discharge hose from any form of sprayer located in the wagon is connected to the threaded opening, shown in the illustration. Two iron pipes are connected to the folding joint on the attachment, each pipe having either two or three nozzles. The device is supported horizontally by strong guy wires connected with the handle, so that the whole attachment can be raised 12 inches if desired. The



Fig. 2.—Enlarged View of Spraying Attachment.

spray can be thrown forward and backward or up and down. Four or six rows can be sprayed any distance apart up to 44 inches, or to cover an area of  $14\frac{1}{2}$  or 22 feet in width. The attachments fold into a small space and can be conveniently hung up out of the way. Any sprayer can be used with it. There is also a modification of this attachment provided with five, six or seven drop pipes, with double nozzles attached to each, for spraying the under sides of the leaves of beet, tobacco and potato plants or other standing plants, reaching both sides of the plant in one operation.

### Double Screw Driver Bit.

The screw driver bit shown in the accompanying cut is so arranged that either end can be put in a brace and the other used for driving screws. The bits are made in No. 1 and No. 2 sizes, the small end of No. 1 to fit Nos. 6 to 8 screws, and the large end for Nos. 8 to 12 screws. The



Double Screw Driver Bit.

small end of No. 2 fits Nos. 8 to 12, and the large end Nos. 12 to 16 screws. The bits will fit all kinds of brace chucks and are referred to as twice as convenient as the single end style, as correctly tempered, of extra quality and warranted. The goods are put on the market by the H. D. Smith & Co., Plantsville, Conn.

### Combination Gasoline Soldering Iron and Blow Torch.

Emmelmann Brothers Mfg. Company, Indianapolis, Ind., is introducing the patent combination automatic soldering iron and blow torch illustrated herewith, which shows the device one-third size. In operation the cap at A is removed and the magazine is filled with gasoline within  $\frac{1}{2}$  inch of being full; then the cap is screwed on firmly. An alcohol lamp, which accompanies each tool, is lighted and the iron is heated at B for at least three minutes, keeping the valve C closed to generate a hot gas pressure. After heating the valve is gently opened, and the device is lighted by passing the tool over the flame at F. The tool should then be heated at B for three minutes longer. The operator can regulate the blast to suit



Combination Gasoline Soldering Iron and Blow Torch.

the work to be done by means of valve C. The soldering copper is universal. Any shape copper point can be used. By removing the copper point shown at E the tool can be used as a blow torch. The company claims that the device requires no pump or platinum coils or other similar appliances; that it will last for an indefinite time if properly taken care of, and that it is well constructed, not complicated, and easily operated and kept clean. When properly started, it is explained, every particle of gasoline is consumed in a hot gas form without any danger of explosion, and the magazine can be refilled

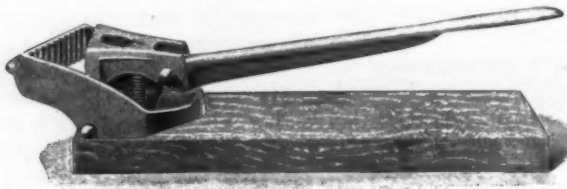
without generating. It is pointed out that the device is never too hot nor too cold, while the strongest wind will not blow it out. The cost to keep the tool in constant operation is said to be about 5 cents a day. This tool is designed for use by electricians, linemen, tinner, plumbers and painters. The tool is furnished with two drop forge coppers—one for regular work and one for heavy work. The head is a high grade steel casting. The cylinder is made of No. 16 gauge drawn brass tubing threaded at both ends. The joints are tinned and sweated. The blunt brass valve stem is used, and the valve seat is made of the same material, to reduce grinding, binding and leakage to a minimum.

In the interest of its galvanized nails, Malleable Iron Fittings Company, Branford, Conn., issues a card in which a table is presented showing relative cost of using black

and galvanized nails per 1000 shingles. The cost of shingling an ordinary house with galvanized nails is referred to as less than \$1.50 more than the cost of black nails, while a properly galvanized nail will outlast the best shingle. The company's nails are said to be galvanized with pure zinc.

### Jumbo Nut Cracker.

The Caldwell Mfg. Company, Rochester, N. Y., is manufacturing the Jumbo nut cracker, here illustrated. The wood base of  $\frac{3}{4}$ -inch material is 3 x 10 $\frac{1}{4}$  inches, and the 9-inch lever is forced downward in use, a stout brass spiral wire spring automatically lifting the lever



Jumbo Nut Cracker.

as the pressure is removed. Both lever and frame have reinforcing ribs and the corrugated jaws are so shaped that the space increases laterally from  $\frac{3}{8}$  to 1 $\frac{3}{8}$  inches, the horizontal space, in nut cracking, decreasing as the lever descends and throwing the upper part of the movable jaw forward. It will crack anything from small hazel nuts to black walnuts. The iron metal parts are japanned and the base stained.

### The Grieves Patent Adjustable Appliance for Carpenters' Brackets.

The appliance for carpenters' brackets shown in the accompanying illustrations is designed for use on buildings, both new and under repair, replacing the old man-



Fig. 1.—The Grieves Adjustable Appliance for Carpenters' Brackets.

ner of putting up brackets. The Common Sense appliance, as it is called, has a drop lever, shown in Fig. 1 in its several positions. A  $\frac{3}{4}$ -inch hole is bored in the side of the building, the drop lever, in position in line with the

handle, is inserted in the hole, the trigger-like handle is touched with the finger, causing the lever to drop to a right angle position, and a second touch of the handle locks it in that position. To attach the appliance to a bracket the screw adjustment is closed up and a  $\frac{1}{8}$ -inch hole bored through corner iron and bracket. Allowing  $\frac{3}{4}$ -inch space between the lever and front of bracket, the rear end of the appliance is fastened to the bracket by a 5-16 inch bolt, as shown in Fig. 2. The advantage of this appliance in a new building is that it is made possible

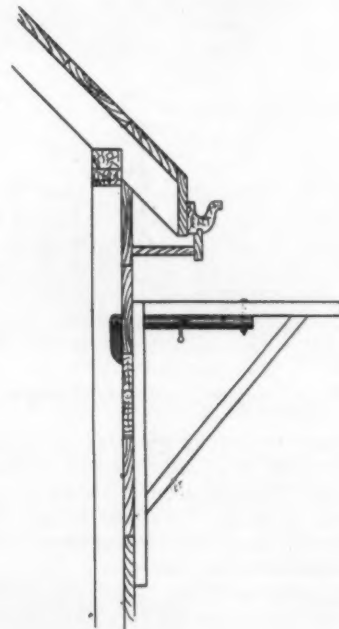


Fig. 2.—Manner of Using Appliance for Carpenters' Brackets.

to lath and plaster while the brackets are still on the outside of the building and clapboarding, for instance, is being done. For old buildings the appliance is said to have advantages over the usual method of putting up push brackets held in place by long pieces of timber braced in a cumbersome manner. The appliance is made of steel and wrought iron. It is manufactured by the Grieves Bros. Company, Amesbury, Mass.

## PAINTS, OILS AND COLORS

### White Lead, Zinc, &c.—

Lead, English white, in Oil..	9 $\frac{1}{2}$ @ 9 $\frac{1}{2}$
Lead, American white, in Oil:	
Lots of 500 lb or over.....	@ 6 $\frac{1}{2}$
Lots less than 500 lb.....	@ 6
In Barrels.....	@ 6
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	@ 1 $\frac{1}{2}$
Lead, White, in oil, 12 $\frac{1}{2}$ lb tin	
pails, add to keg price.....	@ 1
Lead, White, in oil, 1 to 5 lb	
ass'ted tins, add to keg price ..	@ 1 $\frac{1}{4}$
Lead, American, Terms: For lots 12	
tons and over $\frac{1}{4}$ ¢ rebate; and 2% for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2% for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lbs. net.....	@ 6
Lead, White, Dry in bbls.....	@ 6
Zinc, American, dry.....	1 $\frac{1}{2}$ @ 1 $\frac{1}{2}$
Zinc, French:	
Paris, Red Seal, dry.....	84
Paris, Green Seal, dry.....	94
Antwerp, Red Seal, dry.....	74
Antwerp, Green Seal, dry.....	84
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over.....	11 $\frac{1}{2}$ @ 12 $\frac{1}{2}$
Lots of less than 1 ton.....	11 $\frac{1}{2}$ @ 12 $\frac{1}{2}$
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over.....	10 $\frac{1}{2}$ @ 11 $\frac{1}{2}$
Lots of less than 1 ton.....	10 $\frac{1}{2}$ @ 11 $\frac{1}{2}$
Discounts—French   Zinc—Discounts	
to buyers of 10 bbl, lots of one or mixed	
grades, 1%: 25 bbls., 2%; 50 bbls., 4%.	

### Dry Colors—

Black, Carbon.....	5 @ 10
Black, Drop, Amer.....	4 @ 6
Black, Drop, Eng.....	5 @ 15
Black, Ivory.....	16 @ 20
Blue, Com.....	4 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	27 @ 32
Blue, Prussian.....	27 @ 30
Blue, Ultramarine.....	4 $\frac{1}{2}$ @ 15
Brown, Spanish.....	22 @ 1
Carmine, No. 40.....	33.50 @ 1.00
Green, Chrome, ordinary.....	3 $\frac{1}{2}$ @ 8

Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., $\frac{1}{2}$ bbls. and kegs:	
Lots 500 lb or over.....	@ 6 $\frac{1}{2}$
Lots less than 500 lb.....	@ 7
Litharge, American, bbls.....	6 $\frac{1}{2}$ @ 6 $\frac{1}{2}$
Orcher, American Golden.....	2 $\frac{1}{2}$ @ 16.00
Orcher, French.....	14 @ 2 $\frac{1}{2}$
Orcher, Foreign Golden.....	3 @ 4
Orange Mineral, English.....	8 @ 10
Orange Mineral, French.....	10 $\frac{1}{2}$ @ 11 $\frac{1}{2}$
Orange Mineral, German.....	7 $\frac{1}{2}$ @ 10
Orange Mineral, American.....	8 @ 8 $\frac{1}{2}$
Red, Indian, English.....	4 $\frac{1}{2}$ @ 5 $\frac{1}{2}$
Red, Indian, American.....	5 @ 3 $\frac{1}{2}$
Red, Turkey, English.....	4 @ 10
Red, Tuccan, English.....	7 @ 10
Red, Venetian, Amer.....	100 lb \$0.50 @ 1.25
Red, Venetian, English.....	100 lb \$1.15 @ 1.75
Sienna, Italian, Burnt and	
Powdered.....	3 @ 9 $\frac{1}{2}$
Sienna, Ital., Raw, Powd.....	3 @ 6 $\frac{1}{2}$
Sienna, American, Raw.....	1 $\frac{1}{2}$ @ 2
Sienna, American, Burnt and	
Powdered.....	1 $\frac{1}{2}$ @ 2
Talc, French.....	100 lb \$20.00 @ 30.00
Talc, American.....	100 lb 16.00 @ 25.00
Terra Alba, French.....	100 lb 90 @ 1.00
Terra Alba, English.....	100 lb 90 @ 1.00
Terra Alba, American.....	100 lb 60 @ 70
U. No. 1.....	60 @ 70
Terra Alba, American.....	100 lb 45 @ 80
Umber, T. key, Bul. & Pow.....	2 $\frac{1}{2}$ @ 3 $\frac{1}{2}$
Umber, Turkey, Raw & Pow.....	2 $\frac{1}{2}$ @ 3 $\frac{1}{2}$
Umber, Burnt, Amer.....	1 $\frac{1}{2}$ @ 2
Umber, Raw, Amer.....	1 $\frac{1}{2}$ @ 2
Yellow, Chrome.....	11 @ 214
Vermilion, American Lead.....	36 @ 25
Vermilion, Quicksilver, bulk.....	@ 65
Vermilion, Quicksilver, bags.....	@ 65
Vermilion, English, Import.....	75 @ 80
Vermilion, Chinese.....	\$0.90 @ 1.00

### Colors in Oil—

Black, Lampblack.....	12 @ 14
Blue, Chinese.....	27 @ 32
Blue, Prussian.....	27 @ 30
Blue, Ultramarine.....	13 @ 16
Brown, Vandyke.....	11 @ 14
Green, Chrome.....	10 @ 15
Green, Paris.....	@ 24

Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14

### Miscellaneous—

Barytes, White, Foreign.....	@ 100 lb
Barytes, Amer. floated.....	@ 100 lb \$17.50 @ 19.00
Barytes, Crude, No. 1.....	@ 100 lb 17.00 @ 19.00
Chalk, in bulk.....	@ 100 lb 3.00 @ 3.25
Chalk, in bbls.....	@ 100 lb @ .35
China Clay, English.....	@ 100 lb 11.00 @ 17.00
Cobalt, Oxide.....	@ 100 lb 2.50 @ 2.60
Whiting, Common.....	@ 100 lb .43 @ .45
Whiting, Gilders.....	@ 100 lb .50 @ .55
Whiting, Ex. Gilders.....	@ 100 lb .55 @ .60

### Putty, Commercial—

In bladders.....	\$1.70
In bbls. or tubes.....	1.05 @ 1.10
In 1 lb to 5 lb cans.....	2.00 @ 2.90
In 12 $\frac{1}{2}$ to 50 lb cans.....	1.40 @ 1.55

### Spirits Turpentine—

In oil bbls.....	60 @ 60 $\frac{1}{2}$
In machine bbls.....	60 $\frac{1}{2}$ @ 61

### Glue—

Cabinet.....	11 @ 15
Common Bone.....	7 @ 9
Extra White.....	18 @ 24
Foot Stock, White.....	11 @ 14
Foot Stock, Brown.....	8 @ 11
German Hide.....	12 @ 18
French.....	10 @ 40
Irish.....	13 @ 16
Low Grade.....	9 @ 12
Medium White.....	14 @ 17

### Gum Shellac—

Bleached Commercial.....	30 @ 31
Bone Dried.....	42 @ 43
Button.....	26 @ 45
Diamond I.....	50 @ 52
Fine Orange.....	40 @ 45
A. C. Garnet.....	33 @ 35
D. C.....	65 @ .
Octagon B.....	45 @ 50
T. N.....	31 @ 33
V. S. O.....	50 @ 52

### Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	48 @ 49
Linseed, City, boiled.....	50 @ 51
Linseed, State and West'n, raw.....	46 @ 47
Linseed, raw Calcutta seed.....	50
Lard, Prime, Winter.....	58 @ 60
Lard, Extra No. 1.....	47 @ 48
Lard, No. 1.....	35 @ 39
Cotton-seed, Crude, f.o.b. mills.....	19 $\frac{1}{2}$ @ 21
Cotton-seed, Summer Yellow,	
Prime.....	26 $\frac{1}{2}$ @ 27
Cotton-seed, Summer Yellow,	
off grades.....	25 $\frac{1}{2}$ @ 26
Sperm, Crude.....	60 @ .
Sperm, Natural Spring.....	@ .
Sperm, Bleached Spring.....	@ .
Sperm, Natural Winter.....	60 @ 63
Sperm, Bleached Winter.....	63 @ 65
Tallow, Prime.....	51 @ 53
Whale, Crude.....	@ .
Whale, Natural Winter.....	42 @ 44
Whale, Bleached Winter.....	44 @ 46
Menhaden, Brown, Strained.....	28 @ 29
Menhaden, Light, Strained.....	29 @ 30
Menhaden, Bleached, Winter.....	31 @ 32
Menhaden, Ex-Hid. Winter.....	32 @ 33
Menhaden, Southern.....	17 @ 18
Cocanut, Ceylon.....	10 lb 6 $\frac{1}{2}$ @ 7 $\frac{1}{2}$
Cod, Domestic, Prime.....	35 @ 37
Cod, Newfoundland.....	40 @ 42
Red Elaine.....	31 @ 32
Red, Saponified.....	10 lb 4 $\frac{1}{2}$ @ 4 $\frac{1}{2}$
Olive, Italian, bbls.....	54 @ 57
Neatsfoot, prime.....	50 @ 51
Palm, Logos.....	10 lb 5 $\frac{1}{2}$ @ 5 $\frac{1}{2}$

### Mineral Oils—

Black, 29 gravity, 25@30 cold gal.	
test.....	10 $\frac{1}{2}$ @ 11 $\frac{1}{2}$
Black, 29 gravity, 15 cold test.....	11 $\frac{1}{2}$ @ 12 $\frac{1}{2}$
Black, Summer.....	10 $\frac{1}{2}$ @ 11 $\frac{1}{2}$
Cylinder, light filtered.....	18 @ 19
Cylinder, dark filtered.....	16 @ 17
Paraffine, 903-907 gravity.....	11 $\frac{1}{2}$ @ 13
Paraffine, 893 gravity.....	11 $\frac{1}{2}$ @ 12
Paraffine, 883 gravity.....	9 $\frac{1}{2}$ @ 9 $\frac{1}{2}$
Paraffine, Red.....	11 $\frac{1}{2}$ @ 13
In small lots $\frac{1}{4}$ ¢ advance.	



# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$  @ 33 $\frac{1}{2}$  & 10% signifies

that the price of the goods in question ranges from 33 $\frac{1}{2}$  per cent. discount to 33 $\frac{1}{2}$  and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00.....33 $\frac{1}{2}$ %  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%  
Taplin's Perfection.....35%

**Ammunition—**See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvils..... $\frac{1}{2}$  lb. 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ %  
Hay-Budden, Wrought.....9@9 $\frac{1}{2}$ %  
Horseshoe brand, Wrought.....9@9 $\frac{1}{2}$ %  
Trenton..... $\frac{1}{2}$  lb. 9@9 $\frac{1}{2}$ %

## Imported—

Peter Wright & Sons..... $\frac{1}{2}$  lb. 10 $\frac{1}{2}$ %

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15&10%

## Apple Parers—See Parers,

Apple, &c.

## Aprons, Blacksmiths'—

Livingston Nail Co.....33 $\frac{1}{2}$ %

## Augers and Bits—

Com. Double Spur.....70&10%  
Boring Mach. Augers.....70&10%  
Car Bits, 12-in. twist.....50&10%  
Jennings' Patn. reg. finish.50&10%  
Ford's Auger and Car Bits.....40&5%  
Forstner Pat. Auger Bits.....25%  
C. E. Jennings & Co.:  
No. 10 ext. lip. R. Jennings' list.25%  
No. 30, R. Jennings' list.40&7 $\frac{1}{2}$ %  
Russell Jennings.....25&10&2 $\frac{1}{2}$ %  
L'Hommiedieu Car Bits.....15%  
Mayhew's Countersink Bits.....45%  
Millers Falls.....50&10%  
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%  
Pugh's Black.....20%  
Pugh's Jennings' Pattern.....35%  
Snell's Auger Bits.....60%  
Snell's Bell Hangers' Bits.....60%  
Snell's Car Bits, 12-in. twist.....60&10%  
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's small, \$18; large, \$25.....50&10%  
Clark's Pattern, No. 1,  $\frac{1}{2}$  doz. \$26.....50&10%  
No. 2, \$18.....50&10%  
Ford's, Clark's Pattern.....50&10%  
C. E. Jennings & Co., Steer's Pat.25%  
Swan's.....60%

## Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25  
German Pattern, Nos. 1 to 10,  
\$4.60; 11 to 13, \$5.75

## Hollow Augers—

Bonney Pat., per doz. \$9.00@10.00  
Ames.....25&10%  
New Patent.....25&10%  
Universal.....20%  
Wood's Universal.....25%

## Ship Augers and Bits—

Ford's.....33 $\frac{1}{2}$ @35%  
C. E. Jennings & Co.:  
L'Hommiedieu's.....15%  
Watrous.....35&10%  
Ohio Tool Co.'s.....40%  
Snell's.....40%

## Awl Hatts—See Hatts, Awl.

## Awls—

**Brad Awls:**  
Handled.....gro. \$2.75@3.00  
Unhanded, Shlided.....gro. \$3.63@6.64  
Unhanded, Patent.....gro. \$6.00@7.04  
**Peg Awls:**  
Unhanded, Patent.....gro. \$1@3 $\frac{1}{4}$   
Unhanded, Shlided.....gro. \$5@7.04  
**Scratch Awls:**  
Handled, Com.....gro. \$3.50@4.00  
Handled, Socket.....gro. \$11.50@12.00  
Hurwood.....40%

## Awl and Tool Sets—See

Sets, Awl and Tool.

## Axes—

Single Bit, base weights. (up to 3 $\frac{1}{2}$  lb.)  
First Quality.....\$6.50  
Second Quality.....\$6.00  
NOTE.—Heavier Weights add Extras as per regular schedule.

## Axle Grease—

See Grease, Axle

## Axles—

Iron or Steel  
Concord, Loose Collar.....4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %  
Concord, Solid Collar.....4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %  
No. 1 Common, Loose.....3 $\frac{1}{2}$ @3 $\frac{1}{2}$ %  
No. 1 $\frac{1}{2}$  Com., New Style3 $\frac{1}{2}$ @4 $\frac{1}{2}$ %  
No. 2 Solid Collar.....4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %  
Nos. 7, 8, 11 and 12.....7@7 $\frac{1}{2}$ %  
Nos. 13 to 14.....7@10&75&5%  
Nos. 15 to 18.....75&10@75&10&5%  
Nos. 19 to 22.....75&10@75&10&5%

## Boxes, Axle—

Common and Concord, not turned lb. 4 $\frac{1}{2}$ @5 $\frac{1}{2}$ %  
Common and Concord, turned lb. 5 $\frac{1}{2}$ @6 $\frac{1}{2}$ %  
Half Patent.....lb. 8 $\frac{1}{2}$ @9 $\frac{1}{2}$ %

## Bait—

## Fishing—

Heudryx:  
A Bait.....20%  
B Bait.....25%  
Competitor Bait.....20&5%

## Balances—

## Sash—

Caldwell new list.....50%  
Pullman.....50&10&60%

## Spring—

Spring Balances.....60@60&5%  
Chattillon's:  
Light Spg. Balances.....40&10%  
Straight Balances.....40%  
Circular Balances.....50%  
Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—

## Crow—

Steel Crowbars, 10 to 40 lb. .... per lb., 2 $\frac{1}{2}$ @3 $\frac{1}{2}$ %

## Towel—

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$  gro. \$5.50

## Beams, Scale—

Scale Beams.....40&10@50%  
Chattillon's No. 1.....30%  
Chattillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered  $\frac{1}{2}$  doz. \$0.85;  
Tinned.....\$1.00  
No. 11 Wire Coppered  $\frac{1}{2}$  doz. \$1.10;  
Tinned.....\$1.20  
No. 10 Wire Galvanized..... $\frac{1}{2}$  doz. \$1.75  
Western W. G. Co.:  
No. 1 Electric..... $\frac{1}{2}$  gro. \$7.80  
No. 2 Buffalo..... $\frac{1}{2}$  gro. \$9.00  
No. 3 Perfection Dust..... $\frac{1}{2}$  gro. \$8.00

## Egg—

Holt-Lyon Co.:  
Holt, No. A, Japanned..... $\frac{1}{2}$  doz. \$1.20  
Holt, No. 1, Tinned..... $\frac{1}{2}$  doz. \$1.50  
Holt, No. B, Japanned..... $\frac{1}{2}$  doz. \$2.00  
Holt, No. 2, Tinned..... $\frac{1}{2}$  doz. \$2.25  
Lyon, No. 2, Japanned..... $\frac{1}{2}$  doz. \$1.25  
Lyon, No. 3, Japanned..... $\frac{1}{2}$  doz. \$1.50  
Taplin Mfg. Co.:  
No. 60 Improved Dover.....\$6.00  
No. 75 Improved Dover.....\$6.50  
No. 100 Improved Dover.....\$7.00  
No. 102 Improved Dover, Tin'd.....\$8.50  
No. 150 Improved Dover, Hotel.....\$15.00  
No. 152 Imp'd Dover, Hotel, T'd.....\$17.00  
No. 200 Imp'd Dover Tumbler.....\$8.50  
No. 202 Imp'd Dover Tumbler, T'd.....\$9.50  
No. 300 Imp'd Dover Mammoth..... $\frac{1}{2}$  doz. \$25.00  
Western, W. G. Co., Buffalo.....\$7.00  
Wonder (S. S. & Co.)..... $\frac{1}{2}$  gro. net, \$6.00

## Bellows—

Blacksmith, Standard List.....60&10@70&10%

## Blacksmiths'—

Inch. 30 32 34 36 38 40  
Each \$3.25 3.50 4.00 4.50 5.00 5.75  
Extra Length:  
Each \$3.75 4.25 4.75 5.25 6.00 7.00

## Hand—

Inch. 6 7 8 9 10  
Doz. \$4.50 5.00 5.50 6.00 6.50

## Molders—

Inch. 9 10 11 12 14  
Doz. \$3.00 9.00 10.50 12.50 14.50

## Bells—

## Cow—

Ordinary goods.....75&5@75&10&5%  
High grade.....70&10@70&10&5%  
Jersey.....75&10%  
Texas Star.....50%

## Door—

Abbe's Gong.....45%  
Burton Gong.....50%  
Home, B. & E. Mfg. Co.'s.....55&10%  
Lever and Pull, Sargent's.....60&10&10%  
Trip Gong.....50&10@50&10&5%  
Yankee Gong.....55%

## Hand—

## Hand Bells, Polished, Brass..

60&5@60&10&5%  
White Metal.....60%  
Nickel Plated.....50&10@50&10&5%  
Swiss.....60@60&7 $\frac{1}{2}$ %  
Cone's Globe Hand Bells.....33@35%  
Silver Chime.....35@35%

## Miscellaneous—

Farm Bells.....lb. 2 $\frac{1}{2}$ %  
Steel Alloy Church and School.....50&10&5@60&5%  
American Tube & Stamping Co.  
Gongs.....75%  
Table Call Bells.....50@50&10%

## Belting—Leather—

Extra Hey, Short Lap.....60@60&5%  
Regular Short Lap.....65&10@70%  
Standard.....70&5@70&10%  
Light Standard.....70&10@75%  
Cut Leather Lacing.....60&10%  
Leather Lacing Sides, per sq. ft. 17 $\frac{1}{2}$ @18 $\frac{1}{2}$ %

## Rubber—

Agricultural (Low Grade).....75@75&5%  
Common Standard.....70@70&10%  
Standard.....65&70%  
Extra.....60&5@60&10%  
High Grade.....50&5@50&10%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

## Tire—

Detroit Perfected Tire Bender.....40%  
Green River Tire Benders and Upsetters.....20%  
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25;  
No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

## Bicycle Goods—

John S. Leng's Son's 1902 list:  
Chain.....50%  
Parts.....50%  
Spokes.....50%  
Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks—Tackle—

Common Wooden.....70&10@75&5%  
Hartz St. Tackle Blocks.....50&50&5%  
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%  
Lane's Patent Automatic Lock and Junior.....30%  
Stowell's Novelty, Mal. Iron.....50&10%  
Stowell's Self Loading.....60%  
See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c.....30&19@40&10%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Keuffel & Esser Co.....38 $\frac{1}{2}$ %

## Bolts—

Carriage, Machine, &c.—  
Common Carriage (cut thread):  
 $\frac{1}{2}$  x 6 and smaller.....75%  
Larger and longer.....55&10&2 $\frac{1}{2}$ %  
Phila. Eagle \$3.00 list May 24, '99

Bolt Ends, list Feb. 14, '95. 70&2 $\frac{1}{2}$ %  
Machine,  $\frac{1}{2}$  x  $\frac{1}{2}$  and smaller 75&2 $\frac{1}{2}$ %  
Machine, larger and longer.....70&5%

## Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:  
Inch. 3 4 5 6 8  
Per doz. \$0.30 .35 .45 .56 .75  
Cast Iron Spring Foot, Jap'd:  
Inch. 6 8 10  
Per doz. \$1.15 1.40 2.00  
Cast Iron Chain, Flat, Japanned:  
Inch. 6 8 10  
Per doz. \$0.95 1.25 1.55  
Cast Iron Shutter, Japanned, Brass Knobs:  
Inch. 6 8 10  
Per doz. \$0.80 .90 1.20  
Wrt Barrel Jap'd.....80@80&10%  
Wrt "Bronzed".....50@50&10%  
Wrt Spring.....70&10@70&10&10%  
Wrt Shutter.....50&5@50&10&5%  
Wrt Square Neck.....75@75&10%  
Wrt Square.....66%&10@66%&10&10%  
Ives' Patent Door.....60%

## Stove and Plow—

Plow.....65&10@65&10&10%  
Stove.....82 $\frac{1}{2}$ @10@82 $\frac{1}{2}$ @10&5%

## Tire—

Common.....60%  
Norway Iron.....80%  
American Screw Company:  
Norway Phila., list Oct. 16, '81.....80%  
Eagle Phila., list Oct. 16, '84.....82 $\frac{1}{2}$ %  
Bay State, list Dec. 28, '99.....80%  
Franklin Moore Co.:  
Norway Phila., list Oct. 16, '81.....80%  
Eagle Phila., list Oct. 16, '84.....82 $\frac{1}{2}$ %  
Eclipse, list Dec. 28, '99.....80%  
Russell, Burdall & Ward Bolt & Nut Co.:  
Empire, list Dec. 28, '99.....80%  
Norway Phila., list Oct., '81.....80%  
Upon Nut Co.:  
Tire Bolts.....72 $\frac{1}{2}$ %

## Borers, Tap—

Borers Tap, Ring, with Handle:  
Inch. 1 $\frac{1}{2}$  1 $\frac{1}{4}$  1 $\frac{1}{8}$  1 $\frac{1}{16}$  2  
Per doz. \$4.80 5.60 6.40 8.00  
Inch. 2 $\frac{1}{2}$  2 1 $\frac{1}{2}$  1 $\frac{1}{4}$  1 $\frac{1}{8}$  1 $\frac{1}{16}$   
Per doz. \$6.65 11.50  
Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.65; No. 3, \$2.50 each.....25%

## Boxes, Mitre—

C. E. Jennings & Co.....30%  
Langdon.....15&10%  
Perfection..... $\frac{1}{2}$  doz. \$30.00  
Schatz.....40%  
Stanley R. & L. Co.:  
Nos. 280 to 460.....30%  
Nos. 50 and 60.....35%

## Braces—

Common Ball American \$1.25@1.30  
Barber's.....50&10&10@60&10%  
Fray's Genuine Spofford's.....60%  
Fray's No. 70 to 120, 81 to 125, 207 to 414.....60%  
C. E. Jennings & Co.....50&5%  
Mayhew's Ratchet.....60%  
Mayhew's Quick Action Hay Pat.....50%  
Millers Falls Drill Braces.....25&10%  
P. S. & W. Co., Peck's Pat.60&10&60%  
Stanley R. & L. Co.:  
Stanley.....35%  
Victor.....45%

## Brackets—

Wrought Steel.....80&10@80&10&5%  
Bradley's Wire Shelf:  
Full cases.....80&10&10%  
Broken cases.....80&10%  
Griffin's Pressed Steel.....80@80&10%  
Griffin's Folding Brackets.....70&10%  
Stowell's Cast Shelf.....75%  
Stowell's Sink.....50%  
Western, W. G. Co., Wire.....60&10%

## Bright Wire Goods—

See Wire and Wire Goods.

## Broilers—

Kilbourne Mfg. Co.....75&20%  
Western, W. G. Co.....80%  
Wire Goods Co.....75@75&10%

## Buckets, Galvanized—

Price per dozen,  
Quart. .... 19 12 14  
Water, Regular.....1.40 1.70 1.90  
Water, Heavy.....3.40 3.70 3.80  
Fire, Rd. Bottom.....2.30 2.55 2.95  
Well.....2.55 2.87 3.15

## Bucks, Saw—

Hoosier..... $\frac{1}{2}$  gro. \$36.00

## Bull Rings—See Rings, Bull

## Butts—Brass—

Wrought, list Sept., '96.....30%  
Cast Brass, Tiebout.....30%

## Cast Iron—

Fast Joint, Broad.....40&10@50%  
Fast Joint, Narrow.....40&10@50%  
Loose Pin.....70&10@75%  
Loose Pin.....70&10@75%  
Mayer's Hinges.....70&70&5%  
Parliament Butts.....70&70&5%

## Wrought Steel—

Table and Back Flaps.....75%  
Narrow and Broad.....75%  
Inside Blind.....75%  
Loose Pin.....75%  
Loose Pin, Jap'd.....70&10%  
Loose Pin, Ball and Steeple Tip.....65%  
Japanned Ball Tip Butts.....70&10%  
Bronzed, Wrt., Nar. and Inside Blind Butts.....55&10%

## Cages, Bird—

Hendryx, Brass:  
3000, 5000, 1100 series.....5%  
1200 series.....33 $\frac{1}{2}$ %  
200, 300, 600 and 900 series.....40&10%

Hendryx Bronze: 40&10%  
700, 800 series.....40&10%  
Hendryx Enamelled.....40&10%

**Calipers**—See *Compasses*.

**Calks, Toe and Heel**—

Blunt, 1 prong.....per lb. 4.14¢  
Sharp, 1 prong.....per lb. 4.14¢  
Gautier, Blunt.....per lb. 4.14¢  
Gautier, Sharp.....per lb. 4.14¢  
Perkins, Blunt Toe.....per lb. 4.14¢  
Perkins, Sharp Toe.....per lb. 4.14¢

**Can Openers**—

See *Openers, Can*.

**Cans, Milk**—

Illinois Pattern.....1.35 2.05 each.  
New York Pattern.....1.50 2.20 2.45 each.  
Baltimore Pattern.....1.50 2.20 2.45 each.  
Dubuque.....1.35 1.60 1.75 each.

**Cans, Oil**—

Buffalo Family Oil Cans:  
3 5 10 gal.  
\$18.00 60.00 129.60 gro., net.

**Caps, Percussion**—

Eley's E. B.....50¢  
G. D.....per M 34¢  
F. L.....per M 40¢  
G. E.....per M 46¢  
Musket.....per M 62¢

**Primers**—

Berdan Primers, 2¢ per M.....20%  
B. L. Caps (Sturtevant Shells)  
2¢ per M.....20%  
All other primers per M \$1.52 @ 1.60

**Cartridges**—

**Blank Cartridges:**  
32 C. F., \$5.50.....10¢  
38 C. F., \$7.00.....10¢  
22 cal. Rim, \$1.50.....10¢  
32 cal. Rim, \$2.75.....10¢  
B. B. Caps, Con. Ball, Sugd. \$1.90  
B. B. Caps, Round Ball.....\$1.49  
Central Fire.....25¢  
Target and Sporting Rifle.....15¢  
Primed Shells and Bullets.....15¢  
Rim Fire, Sporting.....60¢  
Rim Fire, Military.....15¢

**Castors**—

Bed.....70¢  
Plate.....60¢  
Philadelphia.....75¢  
Acme, Ball Bearing.....33¢  
Boss.....70¢  
Boss Anti-Friction.....70¢  
Gem (Roller Bearing).....50¢  
Martin's Patent (Phoenix).....45¢  
Standard Ball Bearing.....45¢  
Tucker's Patent low list.....30¢  
Yale (Double Wheel) low list.....50¢

**Cattle Leaders**—

See *Leaders, Cattle*.

**Chain, Coil**—

American Coil, Straight Link:  
3-16 3/4 5-16 3/4 7-16 3/4 9-16  
\$7.50 5.35 4.40 3.70 3.55 3.45 3.40  
% 4 1/2 1 to 1 1/2 inch.  
\$3.35 3.30 3.25 3.25 per 100 lb.  
German Coil.....60¢  
Halters and Ties—

Halter Chains.....60¢  
German Pattern Halter Chains,  
list July 21, '97.....60¢  
Cow Ties.....60¢

**Trace, Wagon, &c.**—

Traces, Western Standard: 100 pr.  
6 1/2-6-3, Strght, with ring \$23.50  
6 1/2-6-2, Strght, with ring \$23.50  
6 1/2-6-2, Strght, with ring \$28.00  
6 1/2-10-2, Strght, with ring \$32.00  
NOTE—Add 2¢ per pair for Hooks.  
Twist Traces 2¢ per pair higher than  
Straight Link.

Trace, Wagon and Fancy

Chains.....60¢

**Miscellaneous**—

Jack Chain, list July 10, '93:  
Iron.....60¢  
Brass.....60¢  
Safety Chain.....75¢  
Gal. Pump Chain.....lb. 5¢  
Covert Mfg. Co.:  
Breast.....35¢  
Halter.....35¢  
Heel.....35¢  
Rein.....35¢  
Stallion.....35¢  
Covert Sad. Works:  
Breast.....70¢  
Halter.....70¢  
Hold Back.....70¢  
Rein.....70¢  
Oneida Community:  
Am. Coil and Halters.....40¢  
Am. Cow Ties.....40¢  
Eureka Coil and Halter.....45¢  
Niagara Coil and Halter.....45¢  
Niagara Cow Ties.....45¢  
Niagara Wire Dog Chains.....45¢  
Wire Goods Co.:  
Dog Chain.....70¢  
Universal Dbl.-Jointed Chain.....50¢

**Chalk**—(From Jobbers.)

Carpenters' Blue.....gro. 35¢  
Carpenters' Red.....gro. 30¢  
Carpenters' White.....gro. 25¢  
See also Crayons.

**Checks, Door**—

Bardsley's.....45¢  
Columbia.....50¢  
Eclipse.....60¢

**Chests, Tool**—

American Tool Chest Co.:  
Boy's Chests, with Tools.....55¢  
Youths' Chests, with Tools.....40¢  
Gentlemen's Chests, with Tools.....30¢  
Farmers' Chests, with Tools.....20¢  
Machinists' and Pipe Fitters' Chests, Empty.....50¢  
Tool Cabinets.....50¢  
C. E. Jennings & Co.'s Machinists' Tool Chests.....35¢

**Chisels**—

**Socket Framing and Firmer**

Standard List.....75¢  
Buck Bros.....30¢  
Charles Buck.....30¢  
C. E. Jennings & Co. Socket Firm.....60¢  
C. E. Jennings & Co. Socket Framing No. 15.....60¢  
Ohio Tool Co.'s.....70¢  
Swan's.....70¢  
L. & I. J. White.....30¢

**Tanged**—

Tanged Firms. 33 1-3 @ 33 1-3 @ 10%  
Buck Bros.....30¢  
Charles Buck.....30¢  
C. E. Jennings & Co. Nos. 191, 181, 253  
L. & I. J. White, Tanged.....25¢

**Cold**—

Cold Chisels, good quality.....13¢  
Cold Chisels, fair quality.....11¢  
Cold Chisels, ordinary.....9¢

**Chucks**—

Beach Pat. each \$3.00.....35¢  
Pratt's Positive Drive.....25¢  
Empire.....25¢  
Blacksmiths'.....25¢  
Skinner Patent Chucks:  
Independent Lathe Chucks.....50¢  
Combination.....50¢  
Drill Chucks, New Model.....30¢  
Drill Chucks, Standard.....45¢  
Drill Chuck, Skinner Pat., 0, 1, 2, 3, 5, 6, 7, 8, 9.....25¢  
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 7, 8, 9.....25¢  
Drill Chucks, Positive Drive.....30¢  
Face Plate Jaws.....40¢  
Standard Tool Co.:  
Improved Drill Chuck.....45¢  
Union Mfg. Co.:  
Combination.....50¢  
Czar Drill.....35¢  
Combination Geared Scroll.....40¢  
Geared Scroll.....40¢  
Independent.....50¢  
Independent Steel.....45¢  
Union Drill.....45¢  
Universal.....50¢  
Independent Iron F. Plate Jaws.....40¢  
Independent Steel F. Plate Jaws.....40¢  
Westcott Patent Chucks:  
Lathe Chucks.....50¢  
Little Giant Auxiliary Drill.....50¢  
Little Giant Double Grip Drill.....50¢  
Little Giant Drill, Improved.....50¢  
Oneida Drill.....50¢  
Scroll Combination Lathe.....50¢

**Clamps**—

Adjustable, Hammers'.....20¢  
Cabinet, Sargent's.....50¢  
Carriage Makers, P. S. & W. Co.....50¢  
Carriage Makers, Sargent's.....60¢  
Besly, Parallel.....35¢  
Lineman's, Utica Drop Forge & Tool Co.....40¢  
Saw Clamps, see Vises, Saw Filers.

**Cleaners, Drain**—

Iwan's Champion, Adjustable.....55¢  
Iwan's Champion, Stationary.....55¢

**Sidewalk**—

Star Socket, All Steel.....\$4.05 net  
Star Shank, All Steel.....\$3.24 net  
W. & C. Shank, All Steel.....\$3.24 net  
7 1/2 in., \$3.00; 8 in., \$3.25.

**Cleavers, Butchers'**—

Foster Bros.....30¢  
New Haven Edge Tool Co.....45¢  
Payette R. Plumb.....35¢  
L. & I. J. White.....30¢

**Clippers**—

Chicago Flexible Shaft Company:  
36 Chicago Horse.....\$8.75  
1902 Chicago Horse.....\$10.75  
20th Century Horse, each.....\$5.00  
Lightning Belt.....\$15.00  
Chicago Belt.....\$20.00  
Stewart's Patent Sheep.....\$12.75

**Finger Nail Clippers**—

Smith & Hemenway Co. 1/2 doz. net \$2.00

**Clips, Axle**—

Eagle, 5-16 and 3/4 in. 75¢  
Norway, 5-16 and 3/4 in. 60¢  
Cloth and Netting, Wire

—See *Wire, &c.*

**Cocks, Brass**—

Hardware Hat:  
Compression, Plain Bibbs,  
Globe, Kerosene, Racking,  
&c., Cocks.....70¢

**Coffee Mills**—

See *Mills, Coffee*.

**Collars, Dog**—

Nickel Chain, Walter B. Stevens & Son's list.....40¢  
Leather, Walter B. Stevens & Son's list.....40¢

**Combs, Curry**—

Metal Stamping Co.....40¢

**Mane and Tail**—

Covert's Saddlery Works.....60¢

**Compasses, Dividers, &c.**

Ordinary Goods.....75¢  
Bemis & Call Hdw. & Tool Co.:  
Dividers.....65¢  
Calipers, Double.....65¢  
Calipers, Inside or Outside.....65¢  
Calipers, Wing.....65¢  
Compasses.....65¢

**Conductor Pipe, Galva.**—

L. C. L. to Dealers:

Territory. Nested. Not nested.  
A. Eastern.....75¢  
B. Eastern.....75¢  
Central.....75¢  
Southern.....75¢  
S. Western.....75¢  
Terms, 60 days; 2% cash 10 days.  
Factory shipments generally delivered.  
See also Eave Troughs.

**Coolers, Water**—

Gal. each.....2 3 4 6 8  
Laborator.....\$1.20 \$1.50 \$1.80 \$2.10 \$2.70  
Gal.....3 4 6 8  
Iceland, ea. \$1.80 \$2.10 \$2.40 \$3.00  
Galv. Lined, ea. \$1.25 \$2.00 \$2.25 \$2.50 \$3.50  
Galv. Lined, side handles.....25¢  
Each.....\$1.05 \$2.15 \$2.40 \$3.30 \$4.15 25%

**Coopers' Tools**—

See *Tools, Coopers'*.

**Cord**—

**Sash**—

Braided, Drab.....lb. 35¢

Braided White, Com. lb. 21¢

Cable Laid Italian.....lb. 12¢

Common India.....lb. 10¢

Cotton Sash Cord, Twisted.....lb. 11¢

Patent Russia.....lb. 11¢

Cable Laid Russia.....lb. 11¢

India Hemp, Braided.....lb. 12¢

India Hemp, Twisted.....lb. 12¢

Patent India, Twisted.....lb. 12¢

Anniston Cordage Co.: Braided Cotton.

Old Glory, Nos. 7 to 12.....lb. 28¢

Anniston, Nos. 7 to 12.....lb. 22¢

Old Colony, Nos. 7 to 12.....lb. 22¢

Anniston, Nos. 7 to 12.....lb. 22¢

Pearl Braided, cotton, No. 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100.....lb. 25¢

Edystone Braided, Nos. 7, 8, 9 and 10.....lb. 24¢

Edystone Braided Cotton, No. 6.....lb. 25¢

Harmony Cable Laid Italian, Nos. 7 to 10.....lb. 23¢

Peelless.....lb. 16¢

Cable Laid Italian.....lb. 14¢

Cable Laid Russia.....lb. 12¢

Braided India.....lb. 18¢

Samson, Nos. 8 to 12.....lb. 40¢

Braided, Drab Cotton.....lb. 40¢

Braided, Italian Hemp.....lb. 40¢

Braided, Linen.....lb. 55¢

Braided, White Cotton or Spot.....lb. 35¢

Massachusetts, White.....lb. 28¢

Massachusetts, Drab.....lb. 28¢

Phoenix, White, Nos. 8 to 12, 24¢; No. 7, 24 1/2¢; No. 6, 25 1/2¢

Silver Lake:  
A quality, Drab.....40¢  
A quality, White.....35¢  
B quality, Drab.....35¢  
B quality, White.....30¢  
Italian Hemp.....40¢  
Linen.....57 1/2¢

**Wire, Picture**—

List Oct., '00.....85¢  
Hendryx Standard Wire Picture Cord, 85¢

**Cradles**—

Grain.....40¢

**Crayons**—

White Round Crayons, gr. 5 1/2 @ 6¢

Cases, 100 gr., \$4.00, at factory.

D. M. Steward Mfg. Co.:  
Jumbo Crayons.....gr. \$3.50  
Metal Workers' Crayons, gr. \$2.50  
Soapstone Pencils, round, flat or square.....gr. \$1.50  
Rolling Mill Crayons.....gr. \$2.50  
Railroad Crayons (composition).....gr. \$2.00

Zelnicke's Lumber:  
Red, Blue, Green.....30¢  
Black.....30¢  
See also Chalk.

**Crooks, Shepherds'**—

Fort Madison, Heavy.....1/2 doz. \$7.00

Fort Madison, Light.....1/2 doz. \$6.50

**Crow Bars**—See *Bars, Crow*.

**Cultivators**—

Victor Garden.....50%

**Cutlery, Table**—

International Silver Company:  
No. 12 M'd'm Knives, 1847.....1/2 doz. \$3.50

Star, Eagle, Rogers & Hamilton

and Anchor.....1/2 doz. \$3.00

Wm. Rogers & Son.....1/2 doz. \$2.50

**Cutters**—

H. H. Mayhew Co.....40%

Red Devil.....40%

Smith & Hemenway Co.....40%

Woodward.....40%

**Meat and Food**—

American.....30%

Each.....\$5 \$7 \$10 \$25 \$50 \$60

Enterprise.....25¢

Nos. 5 10 12 22 32

Each.....\$2 \$3 \$2.75 \$4.50 \$6

Dixon's.....1/2 doz. \$3.00 @ 40%

Nos. 1 2 4

Ideal.....\$14.00 \$17.00 \$19.00 \$30.00

Little Giant.....1/2 doz. \$3.40 @ 50%

Nos. 305 310 312 320 322

N. E. Food Choppers.....\$4.00 \$7.00 \$12.00 \$25.00

New Triumph No. 605, 1/2 doz. \$24.00

Russwin Food, No. 1, \$21.00; No. 2, \$27.00

Woodruff's.....1/2 doz. \$3.00 @ 40%

Nos. 100 150

Enterprise Beef Shavers.....1/2 doz. \$15.00

**Slaw and Kraut**—

Henry Disston & Sons:  
Slaw, Corn Grater, &c.....40%

Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%

Kraut Cutters, 36 x 12, 40 x 12.....55%

J. M. Mast Mfg. Co.:  
Kraut Cutters, 1 Knife.....1/2 doz. \$3.00

Combined Slaw Cutter and Corn Grater.....1/2 doz. \$4.00

Tucker & Dorsey Mfg. Co.:  
Kraut Cutters.....40%

Slaw Cutters, 1 Knife.....1/2 gr. \$18¢ @ 30%

Slaw Cutters, 2 Knife.....1/2 gr. \$22¢ @ 30%

**Tobacco**—

All Iron, Cheap.....1/2 doz. \$1.25 @ \$1.50  
Enterprise.....25¢  
National, 1/2 doz., No. 1, \$21; No. 2, \$18.....40%  
Sargent's, 1/2 doz., No. 2.....60%  
Sargent's, Nos. 12 and 21.....60%

**Washer**—

Appleton's, 1/2 doz., \$16.00.....50¢ @ 10%

**Diggers, Post Hole, &c.**—

Dalbey Post Hole Auger, per doz. \$9.00

Iwan's Imp'd Post Hole Auger.....10¢

Iwan's Vaughan Pattern Post Hole Augers.....1/2 doz. \$6.25

Iwan's Perfection Post Hole Digger.....1/2 doz. \$8.25

Iwan's Split Handle Post Hole Diggers.....1/2 doz. \$7.25

Kohler's Universal.....1/2 doz. \$15.00

Kohler's Little Giant.....1/2 doz. \$12.00

Kohler's Hercules.....1/2 doz. \$10.00

Kohler's Invincible.....1/2 doz. \$9.00

Kohler's Rival.....1/2 doz. \$8.00

Kohler's Pioneer.....1/2 doz. \$7.20

Never-Break Post Hole Diggers, 1/2 doz., \$24.00.....60%

Samson, 1/2 doz. \$34.00.....25%

**Dividers**—See *Compasses*.

**Doors, Screen**—

Phillips', style E, 7/8 in.....1/2 doz. \$10.00

Phillips', style 077, 7/8 in.....1/2 doz. \$7.50



**Faucets—**

Cork Lined.....	50¢@50¢10%
Metallic Key, Leather Lined.....	60¢10¢70%
Red Cedar.....	40¢10¢50%
Petroleum.....	70¢10¢75%
B. & L. Co.:	
Star.....	60¢10%
West Lock.....	60¢10%
John Sommer's Peerless Tin Key.....	40%
John Sommer's Boss Tin Key.....	50%
John Sommer's Victor Mtl. Key.....	50¢10%
John Sommer's Duplex Metal Key.....	60%
John Sommer's Diamond Lock.....	40%
John Sommer's I. X. L. Cork Lined.....	50%
John Sommer's Reliable Cork Lined.....	50¢10%
John Sommer's Chicago Cork Lined.....	60%
John Sommer's O. K. Cork Lined.....	50%
John Sommer's No Brand, Cedar.....	50%
John Sommer's Perfection, Cedar.....	40%
McKenna, Brass:	
Burglar Proof, N. P.....	25%
Improved, 3/4 and 1/2 inch.....	25%
Self Measuring:	
Enterprise, 3/4 doz. \$36.00.....	40¢10%
Lane's, 3/4 doz. \$36.00.....	40¢10%
National Measuring, 3/4 doz. \$36.40.....	10%

**Felloe Plates—**

See Plates, Felloe.

**Files— Domestic—**

List revised Nov. 1, 1899.	
Best Brands.....	75¢10¢75¢45%
Standard Brands.....	75¢10¢75¢10¢10%
Lower Grade.....	75¢10¢10¢80¢10%

**Imported—**

Stubbs' Tapers, Stubbs' Hat, July 24, '97.....	33 1-3@40%
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**Fixtures, Fire Door—**

Richards Mfg. Co.:	
Universal No. 103.....	\$4.00
Special, No. 104.....	\$4.00
Fusible Links.....	\$0.25
Expansion Bolts.....	50¢10%

**Grindstone—**

Net Prices:	
Inch .. 15 17 19 21 23	
Per doz. \$2.15 2.85 3.25 3.75 4.50	
P. S. & W. Co.....	30¢10¢40%
Reading Hardware Co.....	60%
Sargent's.....	70%
Stowell's Giant Grindstone Hanger.....	\$0.25
Stowell's Grindstone Fixtures, Extra Heavy.....	50¢10¢10%
Stowell's Grindstone Fixtures, Light.....	60¢10%

**Fodder Squeezers—**

See Compressors.

**Forks—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato.....	60¢10%
Victor, Hay.....	60¢15¢21¢
Victor, Manure.....	60%
Victor, Header.....	65%
Champion, Hay.....	65%
Champion, Header.....	65%
Champion, Manure.....	60¢15¢21¢
Columbia, Hay.....	60¢20%
Columbia, Manure.....	70¢12¢
Columbia, Spading.....	70¢12¢
Hawkeye Wood Barley.....	60¢10%
W. & C. Potato Digger.....	60¢10%
Acme Hay.....	60¢20%
Acme Manure, 4 time.....	60¢10¢5%
Dakota Header.....	60¢20%
Jackson Steel Barley.....	60¢20%
Kansas Header.....	65%
W. & C. Favorite Wood Barley.....	40%
Plated—See Spoons.	

**Frames— Saw—**

White, 8'x7' Bar, per doz. 75¢@80¢	
Red, 8'x7' Bar, per doz. \$1.00@1.25	
Red, Dbl. Brace, per doz. \$1.40@1.50	

**Freezers, Ice Cream—**

Qt. .... 1 2 3 4 5 6	
Each .. \$1.30 \$1.60 \$1.90 \$2.20 \$2.50	

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse— Per 1000 Feet.**

Hemp.....	\$2.75
Cotton.....	3.20
Waterproof Spl. Taped.....	3.65
Waterproof Dbl. Taped.....	4.40
Waterproof Tpl. Taped.....	5.15

**Gates, Molasses and Oil—**

Stebbins' Pattern. 80¢10¢@80¢10¢5%

**Gauges—**

Marking, Mortise, do.....	50¢10¢50¢10¢10¢45%
Chapin-Stephens Co.:	
Marking, Mortise, do.....	50¢10¢50¢10¢10%
Scholl's Patent.....	50¢10¢50¢10%
Door Hangers.....	50¢50¢10%
Stanley R. & L. Co.'s Butt and Rabbit Gauge.....	35%
Marking and Mortise.....	60%
Wire, Brown & Sharpe's.....	25%
Wire, Morse's.....	25%
Wire, P. S. & W. Co.....	30¢10%

**Gimlets— Single Cut—**

Numbered assortments, per gro.	
Nail, Metal, No. 1, \$2.90; 2, \$2.30	
Spike, Metal, No. 1, \$4.00; 2, \$3.50	
Nail, Wood Handled, No. 1, \$2.50; 2, \$2.60	
Spike, Wood Handled, No. 1, \$1.50; 2, \$1.60	

**Glass, American Window**

See Trade Report.

**Glasses, Level—**

Chapin-Stephens Co. 60¢@60¢10¢10%

**Glue, Liquid Fish—**

Bottles or Cans, with Brush..... 25¢@50%

Cans (1/2 pts., pts., qts., 1/2 gal. gal.)..... 25¢@45%

International Glue Co. (Martin's)..... 40¢10%

**Grease, Axle—**

Common Grade.....gro. \$4.50@5.50

Dixon's Everlasting, 10-lb pails, ea. 85¢

Dixon's Everlasting, in boxes, 3/4 doz. 1 lb, \$1.20; 2 lb, \$2.00

**Grips, Nipple—**

Perfect Nipple Grips.....40¢10¢2%

**Griddles, Soapstone—**

Pike Mfg. Co.....33¢@33¢10%

**Grindstones—**

Bicycle Emery Grinder.....\$6.50

Bicycle Grindstones, each.....\$2.50@3.00

Pike Mfg. Co.:
Improved Family Grindstones, per inch, 3/4 doz.....	\$2.00
Pike Mower and Tool Grinder, each.....	\$6.00
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....	\$3.25
**Halters and Ties—**Covert Mfg. Co.:	
Web.....	35¢5%
Jute Rope.....	50%
Sisal Rope.....	30¢10%
Cotton Rope.....	45%
Hemp Rope.....	45%
Covert's Saddlery Works:	
Web and Leather Halters.....	70%
Jute and Manila Rope Halters.....	70%
Sisal Rope Halters.....	60¢20%
Jute, Manila and Cotton Rope Ties.....	70%
Sisal Rope Ties.....	60¢10%
E. T. Ruggs & Co.:	
Leather Halters.....	50%
Web Halters and Webbing.....	60%
Jute and Sisal Rope Halters.....	60%
Jute and Manila Horse and Cattle Ties.....	60%
Cotton Horse Ties.....	60%
Livery Ties, Braided.....	60%
**Hammers—****Handled Hammers—**

Heller's Machinists'.....	40¢10¢40¢10%
Heller's Farriers.....	40¢10¢40¢10%
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75.....	40¢10¢5%
Peck, Stow & Wilcox.....	40¢10¢5%
Fayette R. Plumb:	
Plumb, A. E. Nail.....	33¢@33¢10¢10%
Engineers' and B. S. Hand.....	50¢7¢50¢50¢10¢7¢5%
Machinists' Hammers.....	50¢50¢50¢10¢5%
Riveting and Turners'.....	40¢21¢40¢10¢21¢
Sargent's C. S. New List.....	40%

**Heavy Hammers and Sledges—**

Under 3 lb., per lb. 50¢.....	80¢10¢10¢85%
3 to 5 lb., per lb. 40¢.....	80¢10¢10¢85%
Over 5 lb., per lb. 30¢.....	85¢85¢10%
Wilkinson's Smiths'.....	1 lb. 9¢@10¢

**Handles—**

Agricultural Tool Handles

Asc. Pick, do.....60¢5¢@60¢10¢5%

Hoe, Rake, do.....45¢@50¢5%

Fork, Shovel, Spade, do.....45¢@50¢5%

Long Handles.....45¢@50¢5%

D Handles.....40%

**Cross-Cut Saw Handles—**

Atkins'.....40¢5%

Champion.....45¢@50¢10%

Disston's.....50%

**Mechanics' Tool Handles—**

Auger, assorted.....gro. \$2.50@2.85

Brad Axl. ....gro. \$1.65@1.85

Chisel Handles:
Apple Tanged Firmer, gro. assorted.....	\$2.00@2.65
Hickory Tanged Firmer, gro. assorted.....	\$2.15@2.30
Apple Socket Firmer, gro. assorted.....	\$1.75@1.95
Hickory Socket Firmer, gro. assorted.....	\$1.45@1.60
Hickory Socket Framing, gro. assorted.....	\$1.60@1.75
File, assorted.....	gro. \$1.80@1.90
Hammer, Hatchet, Asc. do.....	60¢10¢60¢10¢10%

Hand Saw, Varished, doz. 80¢85¢; Not Varished.....65¢75¢

**Plane Handles:**

Jack, doz. 30¢; Jack, Bolted 75¢

Fore, doz. 45¢; Fore, Bolted 90¢

Chapin-Stephens Co.:
Carving Tool.....	40¢10¢10%
Chisel.....	35¢@50¢10%
File and Awl.....	65¢@65¢10%
Saw and Plane.....	40¢10¢10%
Screw Driver.....	40¢@40¢10%
Millers Falls Adj. and Hatchet Auger Handles.....	15¢10%
Nicholson Simplicity File Handle.....	3/4 gro. \$0.85@1.50
**Hangers—**

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, do.

Barn Door, New Pattern, Round Groove, Regular:

Inch .. 3 4 5 6 8	
Single Doz. \$0.90 1.25 1.60 1.95 2.50	

Barn Door, New England Pattern, Check Back, Regular:

Inch .. 3 4 5 6	
Single Doz. ....	\$1.30 1.85 2.50 3.00
Allitt Mfg. Co.:	
Reliable, No. 1.....	per doz. \$8.00
Reliable, No. 2.....	per doz. \$8.00
Chicago Spring Butt Co.:	
Friction.....	25%
Oscillating.....	25%
Big Twin.....	25%
Chisholm & Moore Mfg. Co.:	
Roller Bearing.....	50%
Elevator.....	30%
Railroad.....	50%
Cronk & Carrier Mfg. Co.:	
Loose Axle.....	60¢10¢5%
Roller Bearing.....	75¢5%
Griffin Mfg. Co.:	
Solid Axle, No. 10.....	\$12.00
Roller Bearing, No. 11.....	\$15.00
Roller Bearing, Ex. Hy. No. 12.....	\$18.00
Hinged Hangers.....	\$16.00
Lawson Bros. Co.:	
Parlor, Ball Bearing.....	\$4.00
Parlor, Standard.....	\$3.15
Parlor, No. 105.....	\$2.85
Parlor, New Model.....	\$2.80
Parlor, New Champion.....	\$2.25
Barn Door, Standard.....	60¢10¢10%
Hinged.....	net \$6.40
Covered.....	60¢10%
Special.....	70¢5%
Lawrence Bros.:	
Advance.....	60¢10%
Cleveland.....	70¢5%
Clipper, No. 75.....	60%
Crown.....	60¢10%
East Parlor Door, Dbl. Sets.....	\$2.50
Single Sets.....	\$1.25
Giant.....	60¢5%
Hummer.....	70¢5%
New York.....	60¢10%
Peerless.....	70¢5%
Sterling.....	60¢10%
McKinney Mfg. Co.:	
No. 1, Special.....	\$15.00
No. 2, Standard.....	\$18.00
Hinged Hangers.....	\$16.00
Meyers Stayon Hangers.....	60%
Richards Mfg. Co.:	
Pioneer Wood Track No. 3.....	\$2.15
Ball B'r'g St'l Track No. 10.....	\$2.40
Roller B'r'g St'l Track No. 12.....	\$2.30
Ball B'r'g St'l Track No. 13.....	\$2.40
Roller B'r'g St'l Track No. 14.....	\$2.30
Adj. Track No. 15.....	\$2.40
Adjustable Track Tandem Trol.....	60%
ley Track No. 16.....	50%
Seal, Steel Track No. 8.....	\$2.40
Auto Adj. Track No. 22.....	\$2.40
Trolley H. No. 17.....	\$1.40
Trolley F. D. No. 120.....	\$2.35
Trolley F. D. No. 121.....	\$2.45
Trolley F. D. No. 150.....	\$2.60
Safety Underwriters F. D. No. 10.....	\$2.25
Tandem No. 4.....	70¢5%
Trolley F. D. No. 151.....	\$3.00
Palace, Adjustable Track No. 132.....	40¢10%
Royal, Adjustable Track No. 123.....	40¢10%
Ives' Wood Track No. 1.....	\$2.15
Trolley B. D. No. 20.....	\$1.35
Trolley B. D. No. 21.....	\$1.45
Trolley B. D. No. 27.....	\$1.50
Trolley B. D. No. 28.....	\$1.66
Roller Bearings Nos. 32, 40, 41.....	40¢5%
Anti-friction No. 42.....	60¢10%
Hinged Tandem No. 48.....	60%
Folding Door B. B. Swivel No. 135.....	30%
Safety Door Hanger Co.:	
Storm King Safety.....	60%
U. S. Standard Hinge.....	60%
Stowell Mfg. & Foundry Co.:	
Acme Parlor Ball Bearing.....	40%
Atlas Hinge.....	60%
Apex Parlor Door.....	60¢10¢5%
Atlas.....	60%
Baggage Car Door.....	50%
Climax Anti-Friction.....	50¢10%
Elevator.....	40%
Steel, Nos. 300, 404, 500.....	50¢10%
Underwriters' Fire Door.....	40%
Wild West Warehouse Door.....	50%
Zenith for Wood Track.....	50¢10%
A. L. Sweet Iron Works:	
Check Back.....	70%
Climax Anti-Friction.....	50¢10%
Eagle.....	70%
Hilo Hinge.....	60%
New Perfection.....	60%
Pilot.....	60%
Rider Wooner.....	65%
Western Pattern.....	70%
Taylor & Boggis Fy Co.'s Kidder's Roller Bearing.....	50¢15¢10¢5%
Wilcox Mfg. Co.:	
Bike Roller Bearing.....	60¢10%
C. J. Roller Bearing.....	60¢10%
Cycle Ball Bearing.....	50%
Dwarf Ball Bearing.....	40%
Ives' Wood Track.....	60¢10%
L. T. Roller Bearing.....	60¢10¢5%
New Era Roller Bearing.....	50¢10%
O. K. Roller Bearing.....	60¢10¢5%
Prindle, Wood Track.....	60%
Richards' Wood Track.....	60%
Richards' Steel Track.....	50¢10%
Roller Bearing.....	60¢10%
Tandem, Nos. 1 and 2.....	60%
Underwriters' Roller Bearing.....	40%
Velvet.....	40%
Wilcox Auditorium Ball B'r'g.....	20%
Wilcox Barn Trolley No. 125.....	40%
Wilcox Elevator Door, Nos. 112 and 127.....	50%
Wilcox Elev. Door No. 132.....	40%
Wilcox Fire Trolley, Roller Bearing.....	30%
Wilcox Le Roy Noiseless Ball Bearing.....	40%
Wilcox New Century.....	50¢10¢10%
Wilcox O. K. Steel Track.....	50%
Wilcox O. K. Trolley.....	50%
Wilcox Trolley Ball Bearing.....	40%
Wilcox Wideman Narrow Gauge Ball Bearing.....	40%
Por Track, see Rail.	

**Hangers— Garment—**

Fullman Trousers, 3/4 gro. No. 1, \$2.00; No. 4, \$2.00; No. 7, \$7.50	
Victor Folding.....	3/4 gro. \$2.00
Western, W. G. Co.....	70¢10%

**Gate—**

Myers' Patent Gate Hangers, 3/4 doz. net.....\$4.50

**Hasps—**

Griffin's Security Hasp.....50%

McKinney's Perfect Hasp, 3/4 doz.....50%

**Hatchets—**

Regular list, first quality.....40¢75%

Second quality \$1.00 per doz. less than first quality.

**Heaters, Carriage—**

Clark, No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 3D, \$2.75; No. 1D, \$3.00;

No. 3E, \$3.25; No. 1, \$3.50.....15%

Clark Coal, 3/4 doz. \$0.75.....10%

**Hinges—**

Blind and Shutter Hinges—

Surface Gravity Locking Blind:

(Victor; National; 1888 O. P. F.)

Niagara; Clark's O. P. F.; Clark's Tip; Buffalo.)

No. .... 1 3 5

Doz. pair.....\$0.75 1.35 2.70

**Mortise Shutter:**

### Wrought Iron Hinges—

Strap and T Hinges, etc., list  
December 20, 1904:

Light Strap Hinges.....70%	Extra
Heavy Strap Hinges.....75%	100/100%
Light T Hinges.....65%	
Heavy T Hinges.....60%	
Extra H'y T Hinges.....70%	
Hinge Hays.....50%	
Cor. Heavy Strap.....75%	
Cor. Ex. Heavy T.....70%	
Sore Hook.....1 1/2 to 12 in. lb. 3 1/2	
and Strap.....22 to 36 in. lb. 3	
Screw Hook and Eye:	
1/2 to 1 inch.....lb. 6	
1 inch.....lb. 7	
1 1/2 inch.....lb. 9	

### Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers.....35%

### Hods— Coal—

Inch.....15 16 17 18	Per doz.
Galv. Open.....\$2.50 2.75 3.00 3.25	
Jap. Open.....\$1.90 2.10 2.25 2.55	
Galv. Funnel.....\$3.00 3.30 3.60 3.90	
Jap. Funnel.....\$2.45 2.65 2.85 3.30	

### Masons, Etc.—

Cleveland Wire Spring Co.:  
Steel Mortar.....each \$1.45  
Steel Brick.....each \$1.10

### Hoes— Eye—

Scovill and Oval Pattern.....  
60/100/160/240/10/10%  
Grub, list Feb. 23, 1899.....  
70/100/175/10/10%  
D. & H. Scovill.....35%

### Handled—

NOTE.—Manufacturers are  
selling from the list of September  
1, 1904, but many jobbers are still  
using list of August 1, 1899, or  
selling at net prices.

Ft. Madison Cotton Hoe.....70/100/10%  
Ft. Madison Crescent Cultivator Hoe.....  
70/100/10%  
Ft. Madison Mattock Hoes:  
Regular Weight.....1/2 doz. 60%  
Junior Size.....1/2 doz. \$4.00  
Ft. Madison Sprouting Hoe.....1/2 doz. 50%  
Ft. Madison Dixie Tobacco Hoe.....  
75/100/10%

Kretzinger's Cut Easy.....70/10%  
Warren Hoe.....45/10%  
W. & C. Ivanhoe.....70/10%  
B. B. 6 in. Cultivator Hoe.....35%  
B. B. 8 in. Cultivator Hoe.....35%  
Acme Weeding.....1/2 doz. net, \$4.35  
W. & C. L'ning Shuffle Hoe.....70/10%

### Hoisting Apparatus—

See Machines, Hoisting.

### Holders— Bit—

Angular, 1/2 doz. \$24.00.....45/10%  
Hardale's.....45%  
Empire.....45%  
Fullman.....50%

### Door—

Nicholson File Holders and File  
Handles.....33/100%

### Fruit Jar—

Triumph Fruit Jar Holder, 1/2 gross,  
\$10.80; 1/2 doz. \$1.25

### Hooks—Cast Iron—

Bird Cage, Reading.....40%  
Bird Cage, Sargent's List.....60/10%  
Ceiling, Sargent's List.....50/10/10%  
Clothes Line, Reading List.....40%  
Clothes Line, Sargent's List.....50/10%  
Coat and Hat, Sargent's List.....50/10%  
Clothes Line, Stowell's.....70%  
Coat and Hat, Reading.....45/20%  
Coat and Hat, Stowell's.....70%  
Coat and Hat, Wrightsville.....65%  
Harness, Reading List.....60%  
Harness, Stowell's.....70%  
School House, Stowell's.....70%

### Wire—

Belt.....80/100%  
Wire C. & H. Hooks.....75/100/75/100/5%

Atlas, Coat and Hat:  
Single Cases.....75%  
19 Case Lots.....75/10%  
Columbian Hdw. Co., Gem.....60/10%  
Parker Wire Goods Co., King.....75/10%  
Van Wagoner, Coat and Hat.....70%  
Western W. G. Co., Molding.....70%  
Wire Goods Co.:  
Acme.....60/10%  
Chief.....70%  
Crown.....70/10%  
Clear.....65%  
V Brace.....70/10%  
Clear.....50/10%

### Wrought Iron—

Box, 6 in., per doz., \$1.00; 8 in.,  
\$1.25; 10 in., \$2.50.

Cotton.....doz. \$1.05/1.25  
Wrought Staples, Hooks, &c.—  
See Wrought Goods.

### Miscellaneous—

Hooks, Bench, see Staps, Bench.  
Bush, Light, doz. \$4.75; Medium,  
\$5.35; Heavy, \$6.25  
Grass, best, all sizes, per doz. \$1.50  
Grass, common grades, all sizes,  
per doz. \$1.30  
Whiffletree.....lb. 5 1/2/6 1/2  
Hooks and Eyes:  
Brass.....60/100/50/100/10%  
Malleable Iron.....70/100/100/10%  
Covert Mfg. Co., Gate and Scut.....35%  
Hooks.....35%  
Covert Saddlery Works' Self Locking  
Gate and Door Hook.....60%  
Ft. Madison Cut-Easy Corn Hooks,  
1/2 doz. \$3.25 net

Bench Hooks—See Bench Stops.  
Corn Hooks—See Knives, Corn.

### Horse Nails—

See Nails, Horse.

### Horseshoes—

See Shoes, Horses.

### Hose, Rubber—

Garden Hose, 3/4-inch:  
Competition.....ft. 5 @ 6¢  
3-ply Standard.....ft. 8 @ 9¢  
4-ply Standard.....ft. 10 @ 11¢  
3-ply extra.....ft. 11 @ 13¢  
4-ply extra.....ft. 14 @ 16¢  
Cotton Garden, 3/4-in., coupled:  
Low Grade.....ft. 8 @ 9¢  
Fair Quality.....ft. 10 @ 11¢

### Irons— Sad—

From 1/2 to 10.....lb. 3 1/2/3 1/2¢  
B. B. Sad Irons.....lb. 3 1/2/3 1/2¢  
Chinese Laundry.....lb. 3 1/2/3 1/2¢  
Chinese Sad.....lb. 4 @ 4 1/2¢  
Mrs. Potts', cents per set:  
Nos. 50 55 60 65  
Jap'd Tops.....62 59 72 69  
Tin'd Tops.....65 62 75 72  
New England Pressing, lb. 3 1/2/4 1/2¢

### Pinking—

Pinking Irons.....doz. 50/60¢

### Soldering—

Soldering Coppers, 2 1/2 & 3.20/21¢  
1 1/2 & 2.....22/23¢

### Jacks, Wagon—

Covert Mfg. Co.:  
Auto Screw.....30/42%  
Steel.....45%  
Covert's Saddlery Works:  
Daisy.....60/10%  
Victor.....60%  
Lockport.....50%  
Lane's Steel.....30/10/45%  
Richards' Tiger Steel, No. 150.....40%

### Kettles—

Brass, Spun, Plain.....20/25%  
Enameled and Cast Iron—See Ware,  
Hollow.

### Knives—

Butcher, Kitchen, &c.—  
Foster Bros. Butcher, &c.....30%  
Smith & Hemenway Co.....40/10%  
Wilkinson Shear & Cutlery Co.....50%

### Corn—

Withington Acme, 1/2 doz. \$2.65;  
Dent, \$2.75; Adj. Serrated, \$2.20;  
Serrated, \$2.10; Yankee No. 1, \$1.50;  
Yankee No. 2, \$1.15.

### Drawing—

Standard List.....75%  
C. E. Jennings & Co., Nos. 45, 46, 48,  
Jennings & Griffin, Nos. 41, 42.....60%  
Ohio Tool Co.'s.....70%  
Swan's.....70/10/25%  
Watrous.....16%  
L. & I. J. White.....20/45/25%

### Hay and Straw—

Serrated Edge, per doz. \$5.25/5.50  
Iwan's Sickle Edge.....1/2 doz. \$9.50  
Iwan's Serrated.....1/2 doz. \$10.00

### Mincing—

Buffalo.....1/2 doz. \$13.00

### Miscellaneous—

Farriers'.....doz. \$3.00/3.25  
Westholm's.....1/2 doz. \$3.00/3.25

### Knobs—

Base, 2 1/2-inch, Birch, or Maple,  
Rubber tip.....gro. \$1.15/1.20  
Carriage, Jap., all sizes.....  
gro. 40/45¢

### Door, Mineral—

Door, Por. Jap'd.....doz. 70/75¢  
Door, Por. Nickel.....doz. \$2.05/2.15  
Bardale's Wood Door, Shutters, &c. 15%  
Picture, Sargent's.....60/10/10%

### Lacing, Leather—

See Belting, Leather—

### Ladders, Store, &c.—

Lane's Store.....25%  
Myers' Noiseless Store Ladders.....50%  
Richards Mfg. Co.:  
Improved Noiseless, No. 112.....40%  
Climax Shelf, No. 113.....40%  
Trolley, No. 109.....40%

### Ladies, Melting—

L. & G. Mfg. Co. (low list).....25%  
Reading.....60%  
Sargent's.....50/10%

### Lanterns—Tubular—

Regular Tubular, No. 0.....doz. \$3.25/3.50  
Lift Tubular, No. 0.....doz. \$3.50/3.75  
Hinge Tubular, No. 0.....doz. \$3.50/3.75  
Other Styles.....40/100/40/10/45%

### Bull's Eye Police—

No. 1, 2 1/2-inch.....\$2.50/2.75  
No. 2, 3-inch.....\$2.75/3.00

### Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%  
Stowell's Badger, Cast Iron.....50%

### Latches—Thumb—

Roggin's Latches, with screw.....doz. 35/40¢

### Door—

Richards' Bull Dog Heavy No. 125.....40%  
Richards' Trump, No. 127.....50%

### Leaders, Cattle—

Small.....doz. 50¢; large, 40¢  
Covert Mfg. Co., Cotton and Hemp.....45%

### Lifters, Transom—

R. & E.....33/4%

### Lines—

Wire Clothes, Nos. 18 19 20  
100 feet.....\$2.20 2.00 1.65  
75 feet.....\$1.80 1.70 1.30

Samson Cordage Works:  
Solid Braided Chalk, Nos. 0 to 3.40%  
Silk Lake Braided Chalk, No. 0,  
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No.  
3, \$7.50.....1/2 doz. 20%

Masons' Lines, Shade Cord, &c.:  
White Cotton, No. 3 1/2, \$1.50; No. 4,  
\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,  
\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;  
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;  
No. 4 1/2, \$4.50.....20%

Tent and Awning Lines: No. 5,  
White Cotton, \$7.50; Drab Cotton,  
\$8.50.....20%

Clothes Lines, White Cotton: 50 ft.,  
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75  
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;  
100 ft., \$5.25.....20%

Anniston Waterproof Clothes, 50 ft.,  
\$2.00; 60 ft., \$2.20; 70 ft., \$2.40; 80 ft.,  
\$2.60; 90 ft., \$2.80; 100 ft., \$3.00; 110 ft.,  
\$3.20; 120 ft., \$3.40; 130 ft., \$3.60; 140 ft.,  
\$3.80; 150 ft., \$4.00; 160 ft., \$4.20; 170 ft.,  
\$4.40; 180 ft., \$4.60; 190 ft., \$4.80; 200 ft.,  
\$5.00; 210 ft., \$5.20; 220 ft., \$5.40; 230 ft.,  
\$5.60; 240 ft., \$5.80; 250 ft., \$6.00; 260 ft.,  
\$6.20; 270 ft., \$6.40; 280 ft., \$6.60; 290 ft.,  
\$6.80; 300 ft., \$7.00; 310 ft., \$7.20; 320 ft.,  
\$7.40; 330 ft., \$7.60; 340 ft., \$7.80; 350 ft.,  
\$8.00; 360 ft., \$8.20; 370 ft., \$8.40; 380 ft.,  
\$8.60; 390 ft., \$8.80; 400 ft., \$9.00; 410 ft.,  
\$9.20; 420 ft., \$9.40; 430 ft., \$9.60; 440 ft.,  
\$9.80; 450 ft., \$10.00; 460 ft., \$10.20; 470 ft.,  
\$10.40; 480 ft., \$10.60; 490 ft., \$10.80; 500 ft.,  
\$11.00; 510 ft., \$11.20; 520 ft., \$11.40; 530 ft.,  
\$11.60; 540 ft., \$11.80; 550 ft., \$12.00; 560 ft.,  
\$12.20; 570 ft., \$12.40; 580 ft., \$12.60; 590 ft.,  
\$12.80; 600 ft., \$13.00; 610 ft., \$13.20; 620 ft.,  
\$13.40; 630 ft., \$13.60; 640 ft., \$13.80; 650 ft.,  
\$14.00; 660 ft., \$14.20; 670 ft., \$14.40; 680 ft.,  
\$14.60; 690 ft., \$14.80; 700 ft., \$15.00; 710 ft.,  
\$15.20; 720 ft., \$15.40; 730 ft., \$15.60; 740 ft.,  
\$15.80; 750 ft., \$16.00; 760 ft., \$16.20; 770 ft.,  
\$16.40; 780 ft., \$16.60; 790 ft., \$16.80; 800 ft.,  
\$17.00; 810 ft., \$17.20; 820 ft., \$17.40; 830 ft.,  
\$17.60; 840 ft., \$17.80; 850 ft., \$18.00; 860 ft.,  
\$18.20; 870 ft., \$18.40; 880 ft., \$18.60; 890 ft.,  
\$18.80; 900 ft., \$19.00; 910 ft., \$19.20; 920 ft.,  
\$19.40; 930 ft., \$19.60; 940 ft., \$19.80; 950 ft.,  
\$20.00; 960 ft., \$20.20; 970 ft., \$20.40; 980 ft.,  
\$20.60; 990 ft., \$20.80; 1000 ft., \$21.00; 1010 ft.,  
\$21.20; 1020 ft., \$21.40; 1030 ft., \$21.60; 1040 ft.,  
\$21.80; 1050 ft., \$22.00; 1060 ft., \$22.20; 1070 ft.,  
\$22.40; 1080 ft., \$22.60; 1090 ft., \$22.80; 1100 ft.,  
\$23.00; 1110 ft., \$23.20; 1120 ft., \$23.40; 1130 ft.,  
\$23.60; 1140 ft., \$23.80; 1150 ft., \$24.00; 1160 ft.,  
\$24.20; 1170 ft., \$24.40; 1180 ft., \$24.60; 1190 ft.,  
\$24.80; 1200 ft., \$25.00; 1210 ft., \$25.20; 1220 ft.,  
\$25.40; 1230 ft., \$25.60; 1240 ft., \$25.80; 1250 ft.,  
\$26.00; 1260 ft., \$26.20; 1270 ft., \$26.40; 1280 ft.,  
\$26.60; 1290 ft., \$26.80; 1300 ft., \$27.00; 1310 ft.,  
\$27.20; 1320 ft., \$27.40; 1330 ft., \$27.60; 1340 ft.,  
\$27.80; 1350 ft., \$28.00; 1360 ft., \$28.20; 1370 ft.,  
\$28.40; 1380 ft., \$28.60; 1390 ft., \$28.80; 1400 ft.,  
\$29.00; 1410 ft., \$29.20; 1420 ft., \$29.40; 1430 ft.,  
\$29.60; 1440 ft., \$29.80; 1450 ft., \$30.00; 1460 ft.,  
\$30.20; 1470 ft., \$30.40; 1480 ft., \$30.60; 1490 ft.,  
\$30.80; 1500 ft., \$31.00; 1510 ft., \$31.20; 1520 ft.,  
\$31.40; 1530 ft., \$31.60; 1540 ft., \$31.80; 1550 ft.,  
\$32.00; 1560 ft., \$32.20; 1570 ft., \$32.40; 1580 ft.,  
\$32.60; 1590 ft., \$32.80; 1600 ft., \$33.00; 1610 ft.,  
\$33.20; 1620 ft., \$33.40; 1630 ft., \$33.60; 1640 ft.,  
\$33.80; 1650 ft., \$34.00; 1660 ft., \$34.20; 1670 ft.,  
\$34.40; 1680 ft., \$34.60; 1690 ft., \$34.80; 1700 ft.,  
\$35.00; 1710 ft., \$35.20; 1720 ft., \$35.40; 1730 ft.,  
\$35.60; 1740 ft., \$35.80; 1750 ft., \$36.00; 1760 ft.,  
\$36.20; 1770 ft., \$36.40; 1780 ft., \$36.60; 1790 ft.,  
\$36.80; 1800 ft., \$37.00; 1810 ft., \$37.20; 1820 ft.,  
\$37.40; 1830 ft., \$37.60; 1840 ft., \$37.80; 1850 ft.,  
\$38.00; 1860 ft., \$38.20; 1870 ft., \$38.40; 1880 ft.,  
\$38.60; 1890 ft., \$38.80; 1900 ft., \$39.00; 1910 ft.,  
\$39.20; 1920 ft., \$39.40; 1930 ft., \$39.60; 1940 ft.,  
\$39.80; 1950 ft., \$40.00; 1960 ft., \$40.20; 1970 ft.,  
\$40.40; 1980 ft., \$40.60; 1990 ft., \$40.80; 2000 ft.,  
\$41.00; 2010 ft., \$41.20; 2020 ft., \$41.40; 2030 ft.,  
\$41.60; 2040 ft., \$41.80; 2050 ft., \$42.00; 2060 ft.,  
\$42.20; 2070 ft., \$42.40; 2080 ft., \$42.60; 2090 ft.,  
\$42.80; 2100 ft., \$43.00; 2110 ft., \$43.20; 2120 ft.,  
\$43.40; 2130 ft., \$43.60; 2140 ft., \$43.80; 2150 ft.,  
\$44.00; 2160 ft., \$44.20; 2170 ft., \$44.40; 2180 ft.,  
\$44.60; 2190 ft., \$44.80; 2200 ft., \$45.00; 2210 ft.,  
\$45.20; 2220 ft., \$45.40; 2230 ft., \$45.60; 2240 ft.,  
\$45.80; 2250 ft., \$46.00; 2260 ft., \$46.20; 2270 ft.,  
\$46.40; 2280 ft., \$46.60; 2290 ft., \$46.80; 2300 ft.,  
\$47.00; 2310 ft., \$47.20; 2320 ft., \$47.40; 2330 ft.,  
\$47.60; 2340 ft., \$47.80; 2350 ft., \$48.00; 2360 ft.,  
\$48.20; 2370 ft., \$48.40; 2380 ft., \$48.60; 2390 ft.,  
\$48.80; 2400 ft., \$49.00; 2410 ft., \$49.20; 2420 ft.,  
\$49.40; 2430 ft., \$49.60; 2440 ft., \$49.80; 2450 ft.,  
\$50.00; 2460 ft., \$50.20; 2470 ft., \$50.40; 2480 ft.,  
\$50.60; 2490 ft., \$50.80; 2500 ft., \$51.00; 2510 ft.,  
\$51.20; 2520 ft., \$51.40; 2530 ft., \$51.60; 2540 ft.,  
\$51.80; 2550 ft., \$52.00; 2560 ft., \$52.20; 2570 ft.,  
\$52.40; 2580 ft., \$52.60; 2590 ft., \$52.80; 2600 ft.,  
\$53.00; 2610 ft., \$53.20; 2620 ft., \$53.40; 2630 ft.,  
\$53.60; 2640 ft., \$53.80; 2650 ft., \$54.00; 2660 ft.,  
\$54.20; 2670 ft., \$54.40; 2680 ft., \$54.60; 2690 ft.,  
\$54.80; 2700 ft., \$55.00; 2710 ft., \$55.20; 2720 ft.,  
\$55.40; 2730 ft., \$55.60; 2740 ft., \$55.80; 2750 ft.,  
\$56.00; 2760 ft., \$56.20; 2770 ft., \$56.40; 2780 ft.,  
\$56.60; 2790 ft., \$56.80; 2800 ft., \$57.00; 2810 ft.,  
\$57.20; 2820 ft., \$57.40; 2830 ft., \$57.60; 2840 ft.,  
\$57.80; 2850 ft., \$58.00; 2860 ft., \$58.20; 2870 ft.,  
\$58.40; 2880 ft., \$58.60; 2890 ft., \$58.80; 2900 ft.,  
\$59.00; 2910 ft., \$59.20; 2920 ft., \$59.40; 2930 ft.,  
\$59.60; 2940 ft., \$59.80; 2950 ft., \$60.00; 2960 ft.,  
\$60.20; 2970 ft., \$60.40; 2980 ft., \$60.60; 2990 ft.,  
\$60.80; 3000 ft., \$61.00; 3010 ft., \$61.20; 3020 ft.,  
\$61.40; 3030 ft., \$61.60; 3040 ft., \$61.80; 3050 ft.,  
\$62.00; 3060 ft., \$62.20; 3070 ft., \$62.40; 3080 ft.,  
\$62.60; 3090 ft., \$62.80; 3100 ft., \$63.00; 3110 ft.,  
\$63.20; 3120 ft., \$63.40; 3130 ft., \$63.60; 3140 ft.,  
\$63.80; 3150 ft., \$64.00; 3160 ft., \$64.20; 3170 ft.,  
\$64.40; 3180 ft., \$64.60; 3190 ft., \$64.80; 3200 ft.,  
\$65.00; 3210 ft., \$65.20; 3220 ft., \$65.40; 3230 ft.,  
\$65.60; 3240 ft., \$65.80; 3250 ft., \$66.00; 3260 ft.,  
\$66.20; 3270 ft., \$66.40; 3280 ft., \$66.60; 3290 ft.,  
\$66.80; 3300 ft., \$67.00; 3310 ft., \$67.20; 3320 ft.,  
\$67.40; 3330 ft., \$67.60; 3340 ft., \$67.80; 3350 ft.,  
\$68.00; 3360 ft., \$68.20; 3370 ft., \$68.40; 3380 ft.,  
\$68.60; 3390 ft., \$68.80; 3400 ft., \$69.00; 341



**Tarred Paper—**

1 ply (roll 300 sq. ft.), ton	\$32.50@35.50
2 ply, roll 108 sq. ft.	55@60¢
3 ply, roll 108 sq. ft.	78@85¢
Slater's Felt (roll 500 sq. ft.)	75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.)	\$2.75

**Sand and Emery—**

Flint Paper and Cloth	60¢@10¢
Garnet Paper and Cloth	25¢
Emery Paper and Cloth	50¢@10¢

**Papers— Apple—**

Advance	doz. \$4.00
Baldwin	doz. \$4.00
Bonanza Improved	each \$6.50
Daisy	doz. \$4.00
Dandy	each \$7.50
Eureka Improved	each \$2.00
Family Bay State	doz. \$15.00
Improved Bay State	doz. \$36.00
Little Star	doz. \$5.00
New Lightning	doz. \$7.00
Reading 72	doz. \$3.25
Reading 78	doz. \$6.25
Rocking Table	doz. \$6.20
Turn Table '98	doz. \$6.00
White Mountain	doz. \$5.00

**Potato—**

Saratoga	doz. \$7.00
White Mountain	doz. \$6.00

**Picks and Mattocks—**

List Feb. 23, 1899	70¢@75¢
Cronk's Handled Garden Mattock	doz. \$6.40

**Pinking Irons—**

See Irons, Pinking.

**Pins, Escutcheon—**

Brass	60¢@10¢
Iron, list Nov. 11, '85	60¢@10¢

**Pipe, Cast Iron Soil—**

Carload lots.

Standard, 2-6 in.	60¢
Extra Heavy, 2-5 in.	70¢
Fittings	75¢

**Pipe, Merchant—**

Carload lots.

	Steel.	Iron.
Blk. Galv.	Blk. Galv.	
1/2 & 3/4 in.	67 1/2% 51 1/4% 65 1/4% 49 1/4%	
3/4 & 1 in.	71 1/2% 59 1/4% 69 1/4% 57 1/4%	
1 & 1 1/4 in.	75 1/2% 65 1/4% 74 1/4% 61 1/4%	
1 1/2 & 2 in.	70 1/2% 55 1/4% 69 1/4% 53 1/4%	

**Pipe, Sewer—**

Carload lots.

Standard Pipe and Fittings, 2 to 24 in.	
New England	71¢
New York and New Jersey	74¢
Maryland, Delaware, E. Pa.	78¢
West. Pa. and West Va.	80¢
Virginia	76¢
Ohio, Michigan and Ky.	80¢
Indiana	80¢

NOTE.—Carload lots are generally delivered.

**Pipe, Stove—**

Edwards' Nested Stove Pipe:	
C. L.	L. C. L.
5 in., per 100 joints	\$7.00 \$8.00
6 in., per 100 joints	7.50 8.50
7 in., per 100 joints	8.50 9.50

**Planes and Plane Irons—****Wood Planes—**

Bench, first qual.	40¢@10¢
Bench, second qual.	50¢@10¢
Molding	33¢@10¢
Bailey's (Stanley R. & L. Co.)	40¢
Chapin-Stephens Co.:	
Bench, First Quality	40¢@10¢
Bench, Second Quality	50¢@10¢
Molding	33¢@10¢
Toy and German	60¢
Chapin's	60¢
Ohio Tool Co.:	
Bench, First Quality	40¢@10¢
Bench, Second Quality	50¢@10¢
Molding	33¢@10¢
Adjustable Wood Bottom	60¢
Union	60¢

**Iron Planes—**

Bailey's (Stanley R. & L. Co.)	40¢
Chapin's Iron Planes	50¢@10¢
Miscellaneous Planes (Stanley R. & L. Co.)	35¢
Ohio Tool Co.'s Iron Planes	60¢
Sargent's	60¢@10¢
Union	60¢

**Plane Irons—**

Wood Bench Plane Irons	25¢@10¢
Buck Bros.	30¢
Chapin-Stephens Co.	30¢@10¢
Ohio Tool Co.	30¢
Stanley R. & L. Co.	35¢
Union	50¢
L. & J. White	20¢@5¢

**Planters, Corn, Hand—**

Kohler's Eclipse	doz. \$3.50
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**Plates—**

Felco	lb. 3¢@4¢
Self-Sealing Pie Plates (S. & Co.)	doz. \$2.00

**Pliers and Nippers—**

Button Pliers	75¢@10¢
Gas Burner, per doz.	in. \$1.25
@ \$1.30; 6 in., \$1.45 @ \$1.50	
Gas Pipe, 7 in.	12 in.
	\$2.00 \$2.25 \$3.00 \$3.75
Acme Nippers	50¢@5¢
Cronk & Carrier Mfg. Co.:	
American Button	75¢@10¢
Cronk's	60¢
Improved Button	60¢@10¢
Stub's Pattern	35¢
Combination and others	35¢
Heller's Farriers' Nippers, Pincers and Tools	40¢@10¢@10¢@10¢

P. S. & W. Timmers' Cutting Nippers	30¢@30¢@10¢
Swedish Side, End and Diagonal Cutting Pliers	50¢
Utica Drop Forge & Tool Co.:	
Pliers and Nippers, all kinds	40¢

**Plumbs and Levels—**

Chapin-Stephens Co.:	
Plumbs and Levels	30¢@30¢@10¢
Chapin's Imp. Brass Cor. 10¢@10¢	
Pocket Levels	30¢@30¢@10¢
Dianston's Plumbs and Levels	70¢
Dianston's Pocket Levels	70¢
C. E. Jennings & Co.'s Iron	33¢
C. E. Jennings & Co.'s Iron, Adjustable	40¢@7¢
Stanley R. & L. Co.	45¢
Stanley's Duplex	35¢
Woods' Extension	33¢

**Poachers, Egg—**

Buffalo Steam Egg Poachers, per doz.	
No. 1, \$6.00; No. 2, \$9.00; No. 3, \$9.00; No. 4, \$12.00	50¢

**Points, Glaziers—**

Bulk and 1-lb. papers, lb. 8 1/2¢ @ 9¢	
1/2-lb. papers	lb. 9¢ @ 10 1/4¢
1/4-lb. papers	lb. 9 1/2¢ @ 10 1/4¢

**Pokes, Animal—**

Ft. Madison Hawkeye	per doz. \$3.25
Ft. Madison Western	per doz. \$4.00

**Police Goods—**

Manufacturers' Lists	25¢@25¢@5¢
Towers	25¢

**Polish—Metal—**

Prestoline Liquid, No. 1 (1/2 pt.)	doz. \$3.00
No. 2 (1 qt.)	\$9.72
Prestoline Paste	40¢@10¢
George William Hoffman	
U. S. Metal Polish Paste, 3 oz. boxes	per doz. 50¢
per doz. 50¢	per doz. \$4.50
1 lb. boxes	per doz. \$1.25
1 lb. boxes	per doz. \$2.25
U. S. Liquid, 8 oz. cans	per doz. \$1.25
per doz. \$1.25	per doz. \$12.00
Barkeepers' Friend Metal Polish	per doz. \$1.75
per doz. \$1.75	per doz. \$18.00
Wynn's White Silk, 1/2 pt. cans	per doz. \$2.00

**Stove—**

Black Eagle Benzine Paste, 5 lb. cans	per lb. 10¢
Black Eagle, Liquid, 1/2 pt. cans	per lb. 10¢
Black Jack Paste, 3/4 lb. cans	per gr. \$9.00
Black Kid Paste, 5 lb. cans	each \$0.65
Ladd's Black Beauty, gr. 10.00	50¢
Joseph Dixon's	per gr. \$5.75
Dixon's Plumbago	per lb. \$2.50
Pireside	per lb. \$2.50
Gem	per gr. \$1.50
Japanese	per gr. \$3.50
Jet Black	per gr. \$3.50
Peerless Iron Enamel, 10 oz. cans	per doz. \$1.50
Wynn's:	
Black Silk, 5 lb. pail	each \$7.00
Black Silk, 1/2 lb. box	per doz. \$1.00
Black Silk, 5 oz. box	per doz. \$0.75
Black Silk, 1/2 pt. liq.	per doz. \$1.00

**Poppers, Corn—**

1 qt., Square	per gro. \$9.00
1 qt., Round	per gro. \$10.00
1 1/2 qt., Square	per gro. \$11.00
2 qt., Square	per gro. \$13.00

**Post Hole and Tree Augers and Diggers—**

See also Diggers, Post Hole, &amp;c.

**Posts, Steel—**

Steel Fence Posts, each, 5 ft., 42¢	
6 ft., 46¢; 6 1/2 ft., 48¢	
Steel Hitching Posts	each \$1.30

**Potato Parers—**

See Parers, Potato.

**Pots, Glue—**

Enamelled	40¢
Tinned	35¢

**Powder—**

In Canisters:	
Duck, 1 lb.	each 45¢
Fine Sporting, 1 lb.	each 75¢
Rifle, 1/2 lb.	each 15¢
Rifle, 1 lb.	each 25¢
In Kegs:	
12 1/2-lb. kegs	\$2.50
25-lb. kegs	\$4.50

**King's Semi-Smokeless:**

Keg (25 lb. bulk)	\$6.50
Half Keg (12 1/2 lb. bulk)	\$3.50
Quarter Keg (6 1/4 lb. bulk)	\$1.90
Case 24 (1 lb. cans bulk)	\$3.50
Half case (1 lb. cans bulk)	\$4.50
King's Smokeless: Shot Gun Rifle	
Keg (25 lb. bulk)	\$12.00
Half Keg (12 1/2 lb. bulk)	6.25 7.75
Quarter Keg (6 1/4 lb. bulk)	3.25 4.00
Case 24 (1 lb. cans bulk)	14.00 17.00
Half case 12 (1 lb. c. bk.)	7.25 8.75
Robin Hood Sm'less Shot Gun	50¢@20¢

**Presses—****Fruit and Jelly—**

Enterprise Mfg. Co.	20¢@25¢
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**Seal Presses—**

Morrill's No. 1	per doz. \$20.00
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**Pruning Hooks and Shears**

See Shears.

**Pullers, Cork—**

Invincible Cork Puller	\$21.00
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**Pullers, Nail—**

Cyclops	50¢
Miller's Falls, No. 3	per doz. \$12.00
Morrill's No. 1, Nail Puller	per doz. \$20.00
Pearson No. 1, Cyclone Spike Puller	each \$30.00
Pelican	per doz. \$9.00
Seranton, Case Lots:	
No. 2B (large)	\$5.50
No. 3B (small)	\$5.00
Smith & Hemenway Co.:	
Diamond B, No. 2, case lots	per doz. \$6.00
Diamond B, No. 3, case lots	per doz. \$5.50
Giant No. 1	per doz. \$18.00
No. 2	\$16.50
No. 3	\$15.00

**Pulleys, Single Wheel—**

Inch	1 1/2	2	3
Awning or Tackle			
doz.	\$0.30	.45	.60
Hay Fork, Screw or Solid Eye			
doz., 4 in.	\$1.25	5 in., \$1.55	
Inch	2	2 1/2	3
Hot House, doz.	\$0.65	.85	1.20
Inch	1 1/2	2	3
Screw, doz.	\$0.16	.19	.23
Inch	1 1/2	2	3
Side, doz.	\$0.25	.40	.55
Inch	1 1/2	2	3
Stowell's:			
Ceiling or End, Anti-Friction	60¢@10¢		
Dumb Waiter, Anti-Friction	60¢@10¢		
Electric Light	60¢		
Side, Anti-Friction	60¢@10¢		

**Sash Pulleys—**

Common Frame: Square or Round End, per doz.	1 1/2 and 2 in.	16¢@19¢
Auger Mortise, no Face Plate, per doz.	1 1/2 and 2 in.	16¢@19¢
Acme	1 1/2 in., 16¢; 2 in., 19¢	
Fox-All-Steel, Nos. 3 and 7, 2 in.		per doz. 50¢
Grand Rapids All Steel Noiseless	50¢	
Ideal	70¢@10¢	
Niagara	1 1/2 in., 16¢; 2 in., 19¢	
No. 26, Troy	1 1/2 in., 16¢; 2 in., 19¢	
Star	1 1/2 in., 16¢; 2 in., 19¢	
Tackle Blocks—See Blocks.		

**Pumps—**

Cistern	60¢@60¢@10¢
Pitcher Spout	80¢@80¢@10¢
Wood Pumps, Tubing, &c.	45¢@50¢
Barnes Dbl. Acting (low list)	50¢
Barnes' Pitcher Spout	75¢@10¢
Contractors' Rubber Diaphragm	50¢
R. & L. Block Co.	\$10.00
Daisy Spray Pump	per doz. \$7.20
Flint & Walling's Fast Mail Hand (low list)	55¢
Flint & Walling's Fast Mail (low list)	55¢@5¢
Flint & Walling's Right Top Pitcher	80¢
National Specialty Mfg. Co., Measuring	ing, \$6.00
Mechanical Sprayer	\$7.20
Myers' Pumps (low list)	50¢
Myers' Power Pumps	50¢
Myers' Spray Pumps	50¢

**Pump Leathers—**

<b>Pump Leathers—</b>				
<b>Plunger and Lower Valve—Per</b>				
<b>gro.:</b>				
<b>Inch...</b>	<b>2</b>	<b>2½</b>	<b>2½</b>	<b>2¾</b>
	\$2.20	2.50	2.75	3.00
<b>Inch...</b>	<b>3</b>	<b>3½</b>	<b>3½</b>	<b>3¾</b>
	\$3.30	3.60	3.85	4.10
<b>Plunger Cup Leathers—Per 100:</b>				
<b>Inch...</b>	<b>2½</b>	<b>3</b>	<b>3½</b>	<b>4</b>
	\$2.75	3.85	5.00	6.00

**Punches—**

Saddlers' or Drive, good	doz. 50¢@75¢
Spring, single tube, good quality	\$1.75@2.00
Revolving (4 tubes)	doz. \$3.50@3.75
Bemis & Call Co.'s Cast Steel Drive	50¢
Bemis & Call Co.'s Check	50¢
Morrill's No. 1 (A.B.C.)	per doz. \$15.50
No. 2	per doz. \$22.50
Hercules	each \$7.50
Niagara Hollow Punches	40¢
Niagara Solid Punches	55¢@10¢
Steel Screw, B. & K. Mfg. Co.	50¢
Timmers' Hollow, P. S. & W. Co.	35¢@35¢
Timmers' Solid, P. S. & W. Co.	per doz. \$1.44

**Rail—Barn Door, &c.—**

**Rail—Barn Door, &c.—**  
*Cast Iron Barn Door; Flange  
 Screw Holes for Rd. Groove  
 Wheels;*

**Sliding Door, Wrought Brass.**

\$2.50	\$3.00	\$4.40	100 feet.
Angular for Sq. Groove Wheels:			
Small.	Med.	Large.	
\$2.00	\$2.70	\$3.60	100 feet.
Sliding Door, Painted Iron.....			
			2 1/4 @ 2 1/4¢
Sliding Door, Wrought Brass.....			
1 1/2 in., lb.	36¢	.....30%	
Allith Mfg. Co.:			
No. 1, Reliable Hgr. Track,	per ft.	5 1/2¢	
No. 2, Reliable Hgr. Track,	per ft.	7¢	
Crunk's:			
Double Braced Steel Rail.....	per ft.	3¢	
O. N. T. Rail.....	.....2%		
Griffin's:			
xxx,	100 ft.,	1 x 3-16 in.,	\$3.00;
1 1/4	x 3-16 in.,	3.50.	
Hinged Hanger,	per 100 ft.,	1 x 3-16	
in.,	\$3.10;	1 1/4 x 3-16 in.,	\$3.60.
Lane's:			
Hinged Track,	per 100 ft.,	1 in.,	\$3.70;

**Sisal, Tarred, Medium Lath**

**Yarn:**  
Mixed ..... lb. 7½¢  
Pure ..... lb. 9¢  
**Cotton Rope:**  
Best, ¼-in. and larger ..... 16¢  
Medium, ¼-in. and larger ..... 1½¢  
Common, ¼-in. and larger ..... 10½¢  
**Jute Rope:**  
Thread No. 1, ¼-in. & up, lb. 6½¢  
Thread No. 2, ¼-in. & up, lb. 5½¢  
Old Colony Manila Transmission  
Rope ..... lb. 17½¢

**Wire Rope—**

Galvanized ..... 42½¢  
Plain ..... 50¢

**Ropes, Hammocks—**

Covert Mfg. Co.:  
Jute ..... 50¢  
Sisal ..... 30¢  
Covert Saddle Works ..... 60¢

**Rules—**

Boxwood ..... 60¢  
Ivory ..... 35¢  
Chapin-Stephens Co.:  
Boxwood ..... 60¢  
Flexiford ..... 27½¢  
Ivory ..... 35¢  
Miscellaneous ..... 50¢  
Combination ..... 50¢  
Stationers' ..... 10¢

Keuffel & Esser Co.:  
Folding, Wood ..... 35¢  
Folding, Steel ..... 33½¢  
Lufkin's Steel ..... 50¢  
Lufkin's Lumber ..... 60¢  
Stanley R. & L. Co.:  
Boxwood ..... 62½¢  
Ivory ..... 45¢  
Miscellaneous ..... 60¢  
Zig Zag ..... 40¢  
Zig Zag, Pin Joint ..... 42½¢  
Upson Nut Co.:  
Boxwood ..... 60¢  
Ivory ..... 35¢

**Sash Balances—**  
See Balance, Sash.

**Sash Locks—**

See Locks, Sash.

**Sash Weights—**

See Weights, Sash.

**Sausage Stuffers or Fillers**

See Stuffers or Fillers, Sausage.

**Saw Frames—**

See Frames, Saw.

**Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

Atkins':  
Circular ..... 50¢  
Hand ..... 50¢  
Cross Cuts ..... 35¢  
Mulay, Mill and Drag ..... 50¢  
One-Man Saw ..... 40¢  
Wood Saws ..... 40¢  
Hand, Compound &c. ..... 40¢  
Chapin-Stephens Co.:  
Turning Saws and Frames ..... 30¢  
Diamond Saw & Stamping Works:  
Sterling Kitchen Saws ..... 30¢  
Diston's:  
Circular, Solid and Ins'ted Tooth ..... 60¢  
Hand, 2 to 14 in. wide ..... 60¢  
Band, ¼ to 1½ ..... 60¢  
Crosscuts ..... 50¢  
Narrow Crosscuts ..... 50¢  
Mulay, Mill and Drag ..... 50¢  
Framed Woodsaws ..... 35¢  
Woodsaw Blades ..... 35¢  
Woodsaw Hods ..... 25¢  
Hand Saws, Nos. 12, 99, 9, 16, 4100, 128, 120, 76, 77, 8 ..... 25¢  
Hand Saws, Nos. 7, 107, 107½, 5, 1, 0, 00, Combination ..... 30¢  
Compas, Key Hole &c. ..... 35¢  
Butcher Saws and Blades ..... 35¢  
C. E. Jennings & Co.'s:  
Back Saws ..... 25¢  
Butcher Saws ..... 30¢  
Compas and Key Hole Saws ..... 35¢  
Framed Wood Saws ..... 35¢  
Hand Saws ..... 20¢  
Wood Saw Blades ..... 35¢  
Millers Falls:  
Butcher Saws ..... 15¢  
Star Saw Blades ..... 15¢  
Peace & Richardson's Hand Saws ..... 30¢  
Simonds':  
Circular Saws ..... 50¢  
Crescent Ground Cross Cut Saws ..... 35¢  
One-Man Cross Cuts ..... 40¢  
Gang Mill, Mulay and Drag Saws ..... 50¢  
Band Saws ..... 50¢  
Back Saws ..... 25¢  
Butcher Saws ..... 30¢  
Hand Saws ..... 25¢  
Hand Saws, Bay State Brand ..... 40¢  
Compas, Key Hole, &c. ..... 35¢  
Wood Saws ..... 35¢  
Springfield Mach. Screw Co.:  
Diamond Kitchen Saws ..... 40¢  
Butcher Saws ..... 35¢  
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50¢

**Hack Saws—**

Atkins' Hack Saw Blades A & A ..... 25¢  
Diston's:  
Concave Blades ..... 25¢  
Keystone ..... 40¢  
Hack Saw Blades ..... 40¢  
Fitchburg File Works, The Best ..... 25¢  
C. E. Jennings & Co.'s:  
Hack Saw Frames, Nos. 175, 180, 180½ ..... 40¢  
Hack Saws, Nos. 175, 180, 180½ ..... 40¢  
Goodell's Hack Saw Blades ..... 40¢  
Griffin's Hack Saw Frames ..... 35¢  
Griffin's Hack Saw Blades ..... 35¢  
Springfield Mach. Screw Co.:  
Diamond Hack Saw Blades ..... 30¢  
Star Hack Saws and Blades ..... 15¢  
Sterling Hack Saw Blades ..... 30¢  
Sterling Hack Saw Frames ..... 30¢

**Scroll—**

Barnes' No. 7, 115 ..... 25¢  
Barnes' Scroll Saw Blades ..... 40¢  
Barnes' Velpedecore Power Scroll Saw, without boring attachment, \$18 ..... 18¢  
with boring attachment, \$20 ..... 20¢

Lester, complete, \$10.00 ..... 15¢  
Rogers, complete, \$4.00 ..... 15¢

**Scalers, Fish—**

Covert's Saddle Works ..... 60¢

**Scales—**

Family, Turnbills' ..... 50¢

**Counter:**

Hatch, Platform, ½ oz. to 4 lbs. ..... 50¢

Two Platforms, ½ oz. to 8 lbs. ..... 16.00

Union Platform, Plain ..... 1.70

Union Platform, Stpd. ..... 1.85

Chatillon's:  
Eureka ..... 25¢  
Favorite ..... 40¢  
Crocker's Trip Scales ..... 50¢

Chicago Scale Co.:  
The "Little Detective" ..... 25¢  
Union or Family No. 2 ..... 50¢  
Portable Platform (reduced list) ..... 50¢  
Wagon or Stock (reduced list) ..... 25¢  
The Standard ..... 50¢  
"The Standard" R. K. and Wagon ..... 50¢

**Scrapers—**

Box, 1 Handle ..... 2.00

Box, 2 Handle ..... 2.60

Ship, Light, \$2.00; Heavy, \$1.50

Adjustable Box Scraper (S. R. & L. Co.), \$6.00 ..... 45¢

Chapin-Stephens Co., Box ..... 50¢

**Screens, Window and Frames—**

Air Line Pattern Screens ..... 60¢

Flyer Pattern Screens ..... 60¢

Maine Screen Frames ..... 40¢

Perfection Screens ..... 60¢

Phillips Screen Frames ..... 60¢

**See also Doors.****Screws—Bench and Hand**

Bench, Iron, doz., 1 in., \$2.50

2 7/8; 1½, \$3.00; 3.25; 1¼, \$3.50

Bench, W'd, Beech, doz. 30¢

Hand, Wood ..... 30¢

R. Bliss Mfg. Co., Hand ..... 30¢

Chapin-Stephens Co., Hand ..... 30¢

Ohio Tool Co., Bench and Hand ..... 30¢

**Coach, Lag and Hand Rail—**

Lag, Cone Point, list Oct. 1, '99 ..... 75¢

Coach, Gimlet Point, list Oct. 1, '99 ..... 75¢

Hand Rail, list Jan. 1, '81 ..... 75¢

**Jack Screws—**

Standard List ..... 75¢

Millers Falls ..... 50¢

Millers Falls, Roller ..... 50¢

P. S. & W. ..... 50¢

Sargent ..... 70¢

Swett Iron Works ..... 75¢

**Machine—**

List Jan. 1, '98:  
Flat or Round Head, Iron ..... 50¢

Flat or Round Head, Brass ..... 50¢

**Set and Cap—**

Set (Iron) ..... 80¢

Set (Steel), net advance over Iron ..... 25¢

Sq. Hd. Cap ..... 75¢

Hex. Hd. Cap ..... 75¢

Rd. Hd. Cap ..... 60¢

Fuller Hd. Cap ..... 60¢

**Wood—**

List July 23, 1903:  
Manufacturers' printed discounts:  
Flat Head, Iron ..... 87½¢

Round Head, Iron ..... 85¢

Flat Head, Brass ..... 85¢

Round Head, Brass ..... 80¢

Flat Head, Bronze ..... 77½¢

Round Head, Bronze ..... 75¢

Drive Screws ..... 87½¢

**Scroll Saws—**

See Saws, Scroll.

**Scythes—**

Prices announced for next season:  
Clipper Pattern, Grass ..... \$6.20

Full Polished, Clipper ..... \$6.75

Grain ..... \$8.00

Clipper, Grain ..... \$8.25

Weed and Bush ..... \$6.25

**Seeders, Raisin—**

Enterprise ..... 25¢

**Sets—Awl and Tool—**

Aiken's Sets, Awl and Tools:  
No. 20, 2½ doz. \$10.00 ..... 50¢

Fray's Adj. Tool Handles, Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7 ..... 50¢

C. E. Jennings & Co.'s Model Tool Holders ..... 30¢

Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18 ..... 15¢

**Garden Tool Sets—**

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... 40¢

Oregon ..... 30¢

Ruck Bros ..... 30¢

Cannon's Diamond Point, 2½ doz. \$12 ..... 25¢

Mayhew's ..... 30¢

Snell's Cannon's Diamond Point ..... 30¢

Snell's Cor'gated, Cup Pt. ..... 30¢

Snell's Knurled, Cup Pt. ..... 30¢

Springfield Mach. Screw Co.:  
Diamond Knurled Cup Pt. ..... 30¢

**Rivet—**

Regular list ..... 75¢

**Saw—**

Aiken's:  
Genuine ..... 50¢

Imitation ..... 50¢

Atkin's:  
Criterion ..... 40¢

Adjustable ..... 40¢

Bemis & Call Co.'s:  
Cross Cut ..... 30¢

Plate ..... 20¢

Diston's Star and Monarch ..... 25¢

Morrill's No. 1, \$15.00 ..... 50¢

Nos. 3 and 4, Cross Cut, \$20.63 ..... 50¢

No. 5, Mill, \$30.00 ..... 50¢

Nos. 10, 11, 95, \$15.63 ..... 50¢

No. 1 Old Style, \$10.00 ..... 50¢

Special, \$16.25 ..... 50¢

Giant Royal, Cross Cut, \$28.50 ..... 50¢

Royal, Hand ..... 50¢

Taintor Positive ..... 50¢

**Shaving—**

Fox Shaving Sets, No. 30 ..... 30¢

Chicago Wheel & Mfg. Co. ..... 65¢

**Sharpeners, Knife—**

Shaves, Spoke—

Iron ..... 1.10

Wood ..... 1.75

Bailey's (Stanley R. & L. Co.) ..... 45¢

Razor Edge (Stanley R. & L. Co.) ..... 35¢

Chapin-Stephens Co. ..... 30¢

Goodell's ..... 15¢

Wood's F1 and F2 ..... 50¢

**Shears—**

Cast Iron ..... 7 8 9 in.

Best ..... 16.00 18.00 20.00 gro.

Good ..... 13.00 15.00 17.00 gro.

Cheap ..... 5.00 6.00 7.00 gro.

Straight Trimmers, &c.:  
Best quality Jap. .... 70¢

Best quality, Nickel ..... 60¢

Fair quality, Jap. .... 80¢

Fair quality, Nickel ..... 75¢

Tailors' Shears ..... 40¢

Acme Cast Shears ..... 40¢

Heinrich's Tailors' Shears ..... 40¢

Wilkinson's Hedge, 1900 list ..... 40¢

Wilkinson's Branch, Lawn & Border, 40¢

Wilkinson's Sheep, 1900 list ..... 50¢

**Tinners' Snips—**

Steel Blades ..... 20¢

Steel Lead Blades ..... 40¢

Forged Handles, Steel Blades, Berlin, 40¢

Heinrich's Snips ..... 40¢

Jennings & Griffin Mfg. Co.'s 6½ to 10 in. .... 50¢

Niagara Snips ..... 40¢

P. S. & W. Co. .... 20¢

Pruning Shears and Tools

Cronk's Grape Shears ..... 33½¢

Cronk's Pruning Shears ..... 33½¢

Diston's Combined Pruning Hook and Saw, 2 doz. \$18.00 ..... 25¢

Diston's Pruning Hook, 2 doz. \$18.00 ..... 25¢

John T. Henry Mfg. Co.'s ..... 25¢

Pruning Shears, all grades, 40¢

Orange Shears ..... 50¢

Grape ..... 40¢

Tree Pruners ..... 75¢

P. S. & W. Co. .... 33½¢

**Sheaves—Sliding Door—**

Stowell's Anti-Friction ..... 50¢

Patent Roller, Hatfield's ..... 50¢

list ..... 70¢

Reading ..... 40¢

R. & E. list ..... 33½¢

Wrightsville Hatfield Pattern ..... 80¢

**Sliding Shutter—**

Reading list ..... 40¢

R. & E. list ..... 33½¢

Sargent's list ..... 50¢

**Shells—Shells, Empty—**

Brass Shells, Empty:  
First quality all gauges ..... 60¢

Climax, Club, Rival, 10 and 12 gauge ..... 65¢

Paper Shells, Empty:  
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge ..... 25¢

Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge ..... 20¢

Climax, Union, League, New Rival, 10 and 12 gauge ..... 25¢

Climax, Union, League, New Rival, 14, 16 and 20 gauge (\$7.50 list) ..... 20¢

Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge ..... 33½¢

Robin Hood, Low Brass ..... 30¢

Robin Hood, High Brass ..... 30¢

**Shells, Loaded—**

Loaded with Black Powder ..... 40¢

Loaded with Smokeless Powder, medium grade ..... 40¢

Loaded with Smokeless Powder, high grade ..... 40¢

Robin Hood Smokeless Powder:  
Robin Hood, Low Brass ..... 50¢

Comets, High Brass ..... 50¢

**Shoes, Horse, Mule, &c.—**

F.o.b. Pittsburgh:  
Iron ..... per keg \$4.00

Steel ..... per keg \$3.75

Burden's, all sizes ..... per keg \$3.90

**Shot—**

Drop, up to B, 25-lb. bag ..... \$1.65

Drop, B and larger ..... per 25-lb. bag, \$1.90

Ruck, 25-lb. bag ..... \$1.90

Chilled, 25-lb. bag ..... \$1.90

**Shovels and Spades—**

Association List, Nov. 15, 1902 ..... 40¢

**Sieves and Sifters—**

Hunter's Imitation ..... 10.50

Hunter's Genuine ..... 12.50

per



Pike Mfg. Co., 1901 list:  
Black Diamond S. S. 3/4 gro. \$12.00  
Lamotte S. S. 3/4 gro. \$11.00  
White Mountain S. S. 3/4 gro. \$9.00  
Green Mountain S. S. 3/4 gro. \$6.00  
Extra Indian Pond S. S. 3/4 gro. \$7.50  
No. 1 Indian Pond S. S. 3/4 gro. \$7.00  
No. 2 Indian Pond S. S. 3/4 gro. \$4.50  
Leader Red Knives 10 in. \$4.50  
Emerald and Corundum 10 in. \$3.00  
Pure Corundum 10 in. \$3.00  
Crescent 10 in. \$3.00  
Emerald Scythe Rifles 2 Coat. \$7.00  
Emerald Scythe Rifles 4 Coat. \$10.00  
Emerald Scythe Rifles 4 Coat. \$12.00  
Balance of 1904 list 33 1/2%

## Oil Stones, &amp;c.—

Chicago Wheel & Mfg. Co., 1901 list:  
Gem Corundum Oil, Double Grit. 50%  
Gem Corundum Oil, Single Grit. 50%  
Gem Corundum Oil, Double Grit. 50%  
Gem Corundum Oil, Single Grit. 50%  
Gem Corundum Oil, Double Grit. 50%  
Gem Corundum Oil, Single Grit. 50%  
Pike Mfg. Co., 1901 list:  
Arkansas St. No. 1, 3 to 5 1/2 in. \$2.80  
Arkansas St. No. 1, 5 1/2 to 8 in. \$3.50  
Arkansas St. No. 1, 8 to 10 in. \$4.00  
Lily White Washita, 4 to 8 in. 60¢  
Rosy Red Washita, 4 to 8 in. 60¢  
Washita St., Extra, 4 to 8 in. 50¢  
Washita St., No. 1, 4 to 8 in. 40¢  
Washita St., No. 2, 4 to 8 in. 30¢  
Lily White Slips. 90¢  
Rosy Red Slips. 90¢  
Washita Slips, Extra. 80¢  
Washita Slips, No. 1. 70¢  
Washita Slips, No. 2. 60¢  
Quickcut Emery and Corundum Oil Stone, Double Grit. 33 1/2%  
Quickcut Emery and Corundum Oil Stone, Single Grit. 33 1/2%  
Quickcut Emery Rubbing Bricks. 33 1/2%  
Hindustan No. 1, R. G. lar. 1 lb. 8¢  
Hindustan No. 1, Small. 1 lb. 8¢  
Axe Stones (all kinds). 25¢  
Turkey Oil Stones, Extra, 5 to 8 in. 10¢  
Queer Creek Stones, 4 to 8 in. 20¢  
Queer Creek Slips. 20¢  
Sand Stone. 40¢  
Belgian, German and Swazy Razor Hones. 50%  
Natural Grit Carving Knife Hones. 30¢  
Quick Edge Pocket Knife Hones. 25¢  
Mounted Kitchen Sand Stone. 1.50

## Stoners, Cherry—

Enterprise 25¢@30%

## Stoppers, Bottle—

Victor Bottle Stoppers. 90¢ gro.

## Stops—Bench—

Millers Falls. 15¢@10.00  
Morrill's, 1/2 doz. No. 1, 10.00. 50%  
Morrill's, No. 2, 12.50. 50%

## Door—

Chapin-Stephens Co. 60¢@60.10%

## Plane—

Chapin-Stephens Co. 20%

## Straps—Box—

Cary's Universal, case lots. 20¢@10.10%

## Hame—

Covert's Saddlery Works. 60¢@10%

## Stretchers, Carpet—

Cast Iron, S. P. Points. doz. 55¢@60%

Socket. 1.75  
Excelator Stretcher and Tack Hammer Combined. 30¢ doz. 36.00. 20%

## Stuffers, Sausage—

Enterprise Mfg. Co. 25¢@25.74%

National Specialty Co., list Jan. 1, 1902. 30¢@3%

## Sweepers, Carpet—

National Sweeper Co. 30¢ doz.

Auditorium Roller Bearing (26 in. case). Nickel. \$54.00

Mammoth Roller Bearing (30 in. case). Nickel. \$60.00

Marion Roller Bearing, regular finishes, full Nickel. \$24.00

Marion Queen, Roller Bearing, full Nickel. \$24.00

Monarch Roller Bearing, N. kel. \$22.00

Monarch Roller B'r's, Jap. med. \$20.00

Transparent Roller Bearing, Plate Glass Top, Nickel. \$36.00

Monarch Extra Roller Bearing (17-in. case), Jap. med. \$36.00

Monarch Extra Roller Bearing (17-in. case), Jap. med. \$36.00

National Queen, Fancy Veneers. \$27.00

Perpetual Regular B'r's, N. kel. \$20.00

Perpetual Regular B'r's, Jap. \$18.00

Triple Medal. \$24.00

NOTE—Rebates: 50¢ per dozen on three-dozen lots; \$1 per dozen on five-dozen lots; \$2 per dozen on ten-dozen lots; \$1.50 per dozen on twenty-five-dozen lots.

## Tacks, Finishing Nails, &amp;c.

New List, April 1, 1905.

American Carpet Tacks. 90¢@37 1/2%

American Cut Tacks. 90¢@37 1/2%

Succes Cut Tacks. 90¢@37 1/2%

Succes Upholsterers' Tacks. 90¢@37 1/2%

Gimp Tacks. 90¢@37 1/2%

Lace Tacks. 90¢@37 1/2%

Trimmers' Tacks. 90¢@37 1/2%

Looking Glass Tacks. 90¢@37 1/2%

Bill Posters' and Railroad Tacks. 90¢@37 1/2%

Hungarian Nails. 90¢@37 1/2%

Finishing Nails. 90¢@37 1/2%

Trunk and Clout Nails. 90¢@37 1/2%

NOTE—The above prices are for Straight Weights. An extra 5¢ is given on Star Weights and an extra 10¢ on Standard Weights.

## Miscellaneous—

Double Pointed Tacks. 90¢@7 1/2%

Steel Wire Brads, R. & E. Mfg. Co. 50¢@10.60%

See also Nails, Wire.

## Tanks, Oil—

Each.  
Emerald S. S. & Co. 30-gal. \$3.40  
Emerald S. S. & Co. 60-gal. \$4.25  
Queen City S. S. & Co. 30-gal. \$3.65  
Queen City S. S. & Co. 60-gal. \$4.50

## Tapes, Measuring—

American Asses' Skin. 40¢@10.50%  
Patent Leather. 25¢@30.65%  
Steel. 40¢@10.10%  
Chesterman's. 25¢@12.65%  
Eddy Asses' Skin. 40¢@10.50%  
Eddy Patent Leather. 25¢@30.65%  
Eddy Steel. 40¢@10.10%  
Keuffel & Esser Co. 40¢@10.10%  
Favorite, Ass Skin. 40¢@10.50%  
Favorite, Duck and Leather. 25¢@30.65%  
Metallic and Steel, lower list. 25¢@30.65%  
Pocket. 35¢@35.65%  
Lufkin's. 35¢@35.65%

## Teeth, Harrow—

Steel Harrow Teeth, plain or headed, 5/8-inch and larger. 30¢ per 100 lbs. \$3.00

## Thermometers—

Tin Case. 80¢@10.80.10.65%

## Ties, Bale—Steel Wire—

Single Loop. 80¢@2 1/2%

## Monitor, Cross Head, &amp;c.—

70%

## Brick Ties—

Niagara Brick Ties. 25¢@10%

## Tinners' Shears, &amp;c.—

See Shears, Tinners', &c.

## Tinware—

Stamped, Jammed and Pieced, sold very generally at net prices.

## Tips, Safety Pole—

Covert's Saddlery Works. 60¢@10%

## Tire Benders, Upsetters, &amp;c.—

See Benders and Upsetters, Tire.

## Tools—Coopers'—

L. & I. J. White. 20¢@20.5%

## Hay—

Myers' Hay Tools. 50%

Stowell's Hay Carriers. 50%

Stowell's Hay Forks. 50%

Stowell's Fork Pulleys. 50%

## Saw—

Atkins' Cross Cut Saw Tools. 40%

Simonds' Improved. 33 1/2%

Simonds' Crescent. 25%

## Ship—

L. & I. J. White. 25%

## Transom Lifters—

See Lifters, Transom.

## Traps—Fly—

Balloon, Globe or Acme, doz. \$1.50; \$1.25; gro. \$11.50; \$12.00

Harper, Champion or Paragon, doz. \$1.25; \$1.40; gro. \$13.00; \$13.50

## Game—

Oncida Pattern. 75¢@10.75.10.65%

Newhouse. 45¢@45.65%

Hawley & Norton. 65%

Victor and Oncida. 70¢@10.70.10.65%

O. C. Jump (Blake Pat.). 60¢@60.10%

## Mouse and Rat—

Mouse, Wood, Choker, doz. holes 84¢@19¢

Mouse, Round or Square Wire. doz. 85¢@9¢

Marty French Rat and Mouse Traps (Genuine):

No. 1, Rat, each \$1.21; 3 doz. \$13.25

No. 3, Rat, 3 doz. \$6.50; case of 50

No. 3 1/2, Rat, 3 doz. \$5.25; case of 72

No. 4, Mouse, 3 doz. \$3.85; case of 150

No. 5, Mouse, 3 doz. \$3.00; case of 150

22.25 doz.

## Trimmers, Spoke—

Wood's E. I. 50%

## Trowels—

Disston Brick and Pointing. 30%

Disston Plastering. 25%

Disston "Standard Brand" and Garden Trowels. 35%

Kohler's Steel Garden Trowels. 5 in. 30¢ gro. \$4.80

Kohler's Steel Garden Trowels. 6 in. 30¢ gro. \$6.00

Never-Break Steel Garden Trowels. 30¢ gro. \$6.00

Rose Brick and Plastering. 25¢@5%

Woodrugh & McParlin, Plastering. 25%

## Trucks, Warehouse, &amp;c.—

B. & L. Block Co. 50¢@10%

New York Pattern. 50¢@10%

Western Pattern. 60¢@10%

Handy Trucks. 30¢ doz. \$16.00

Grocery. 30¢ doz. \$15.00

Daisy Stove Trucks, Improved Pattern. 30¢ doz. \$18.50

McKinney Trucks. each \$10.00

Model Stove Trucks. 30¢ doz. \$18.50

## Tubs, Wash—

No. 1 2 3

Galvanized, per doz. \$4.50 5.00 5.75

Galvanized Wash Tubs (S. S. & Co.):

No. 1 2 3 10 20 30

Per doz., net. \$5.70 6.30 7.20 6.60 7.20 8.10

## Twine, Miscellaneous—

Flax Twine: BC. B.

No. 9, 1/4 and 1/2-lb. Balls. 22¢@24¢

No. 12, 1/4 and 1/2-lb. Balls. 18¢@20¢

No. 18, 1/4 and 1/2-lb. Balls. 16¢@18¢

No. 24, 1/4 and 1/2-lb. Balls. 16¢@18¢

No. 36, 1/4 and 1/2-lb. Balls. 15¢@17¢

## Chalk Line, Cotton 1/2-lb. Balls

30¢

Cotton Mops, 6, 9, 12 and 15 lb. to doz. 9¢@11¢

Cotton Wrapping, 5 Balls to lb., according to quality. 13¢@20¢

American 2-Ply Hemp, 1/4 and 1/2-lb. Balls. 13¢@14¢

## American 3-Ply Hemp, 1-lb. Balls

13¢@14¢

India 2-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine). 31¢

India 3-Ply Hemp, 1-lb. Balls. 31¢

India 3-Ply Hemp, 1/4-lb. Balls. 7¢@8¢

2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls. 9¢@10¢

Mason Line, Linen, 1/2-lb. Bils. 46¢

No. 26 1/2 Mattress, 1/4 and 1/2-lb. Balls. 37¢

Wool, 3 to 6 ply. B 4¢; A 5¢

## Vises—

Solid Box. 60¢@10.60.10.10%

## Parallel—

Athol Machine Co. 40%

Standard. 40%

Amateur. 25%

Columbian Hdw. Co. 40%

Emmert Universal: Pattern Makers' No. 1, \$15.00; No. 2, \$12.50; No. 3, \$10.00

Machinist and Tool Makers' No. 4, \$12.50; No. 5, \$7.00; No. 6, \$10.00;

No. 10, \$21.50.

Jewelers' No. 7. \$4.00

Fisher & Norris Double Screw. 15¢@10

Holland's. 40¢@40.65%

Keystone. 65¢@50.70

Lewis Tool Co. 20¢@30

Merrill's. 20

Miller's Falls. 60¢@10

Massive Vise Co. 40%

Cluncher. 40%

Perfect. 33 1/2%

Lightning Grip. 20%

Parker's: Victor. 20¢@25

Regulars. 20¢@25

Vulcan's. 40¢@40

Combination Pipe. 50¢@60

Prentiss. 20¢@25

Sargent's. 40%

Smith & Hemenway Co. 40%

Machinists'. 40%

Snediker's. 33 1/2%

Stephens'. 33 1/2%

## Saw Filers—

Disston's D 3 Clamp and Guide, 30

doz. \$30.

Perfection Saw Clamps, 30 doz. \$5.00

Reading. 33 1/2%

Wentworth's Rubber Jaw, Nos. 1, 2 and 3. 55¢@50

## Wood Workers—

Massive Vise Co. 15%

Lightning Grip. 15%

Perfect. 15%

Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.

## Miscellaneous—

Bigall & Keeler Combination Pipe Vise. 60¢@10

Holland's Combination Pipe. 60¢@60.65%

Massive's Quick Action Pipe. 40%

Parker's Combination Pipe: 87 Series. 60%

157 Series. 60%

No. 870. 40%

## Wads—Price per M.

B. E., 11 up. 60¢

B. E., 9 and 10. 70¢

B. E., 8. 80¢

B. E., 7. 80¢

P. E., 11 up. 1.00

P. E., 9 and 10. 1.25

P. E., 8. 1.50

P. E., 7. 1.50

Ely's B. E., 11 and larger. \$1.70@1.75

Ely's P. E., 12 to 20. \$3.00@3.25

# CURRENT METAL PRICES.

MAY 3, 1905.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—	
Bar Iron from store—	
Refined Iron:	
1 to 1 1/2 in. round and square.....	per lb 2.00¢
1 1/2 to 4 in. x 3/4 to 1 in.....	per lb 2.25¢
1 1/2 to 4 in. x 1/2 to 5-16.....	per lb 2.25¢
Rods—1/2 and 11-16 round and square.....	Cts per lb
Angles:	
8 in. x 1/2 in. and larger.....	2.20¢
8 in. x 3/4 in. and 1/2 in.....	2.45¢
1 1/2 to 2 1/2 in. x 1/2 in.....	2.25¢
1 1/2 to 2 1/2 in. x 3-16 in. and thicker.....	2.20¢
1 to 1 1/2 in. x 3-16 in.....	2.25¢
1 to 1 1/2 in. x 1/2 in.....	2.45¢
7/8 x 1/2 in.....	2.55¢
3/4 x 1/2 in.....	3.00¢
5/8 x 1/2 in.....	4.10¢
Tees:	
1 in.....	2.55¢
1 1/2 in.....	2.35¢
1 1/2 to 2 1/2 in.....	2.25¢
3 in. and larger.....	2.40¢
Beams.....	2.20¢
Channels, 3 in. and larger.....	2.30¢
Rails—1 1/2 to 6 x 3-16 to No. 8.....	2.30¢
Borden's "Best" Iron, base price.....	3.05¢
Borden's "H. B. & S." Iron, base price.....	2.85¢
"Ulster".....	3.10¢
Norway Bars.....	3.80¢
Norway Shapes.....	3.80¢

Merchant Steel from Store—	
Persemer Machinery.....	per lb 1.85¢
Toe Calk, Tire and Sleigh Shoe.....	2.30¢@3.00¢
Best Cast Steel, base price in small lots.....	7¢

Sheet Iron from Store—	
Black.	
	One Pass, C.R. R. G.
	Soft Steel. Cleaned.
No. 14.....	per lb 2.70¢
No. 18 to 21.....	per lb 2.75¢
No. 27.....	per lb 2.90¢
No. 28.....	per lb 3.00¢

Russia, Planished, &c.	
Genuine Russia, according to assort-ment.....	per lb 1 1/4¢@1 1/2¢
Patent Planished.....	per lb A, 10¢; B, 9¢, net.
Galvanized.	
No. 14 to 16.....	per lb 3.05¢
No. 22 to 24.....	per lb 3.45¢
No. 27.....	per lb 3.90¢
No. 28.....	per lb 4.15¢
No. 10 and lighter 36 inches wide, 25¢ 1 higher	

METALS—	
Tin—	
Straits Pig.....	per lb 31 @ 31 1/2¢
Tin Plates—	
American Charcoal Plates (per box.)	
A.A.A. Charcoal:	
IC, 14 x 20.....	5.95
IX, 14 x 20.....	7.20
A. Charcoal:	
IC, 14 x 20.....	5.30
IX, 14 x 20.....	6.30
American Coke Plates—Bessemer—	
IC, 14 x 20.....	108 lb. \$4.30
IX, 14 x 20.....	5.30
American Terne Plates—	
IC, 20 x 24.....	\$8.50
IX, 20 x 24.....	10.50
Copper—	
Lake Ingot.....	per lb 15 1/4¢@16¢
Casting.....	per lb 15 1/4¢@15 1/2¢
Sheet Copper Hot Rolled, 16 oz.....	per lb 19¢
Sheet Copper Cold Rolled, 1¢ per lb advance over Hot Rolled.....	14 " 20¢
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.....	
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.....	
Bottoms, Pits and Flats.....	per lb 23¢ basis
Planished Copper, 1¢ per lb more than Polished.....	

Seamless Brass Tubes—	
Outside Diameter.	
Net.	
Base Price 20¢	
Stubs <sup>a</sup>	
W. G.	
4-11	1/4 5-16 3/8 7-16 1/2 9-16 5/8 3/4 7/8 1 1 1/4 1 1/2
12	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
13	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
14	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
15	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
16	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
17	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
18	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
19	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
20	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
21	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
22	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
23	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
24	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2
25	1 1/4 1 1/2 1 3/4 1 5/8 1 3/4 1 1/2 1 1/4 1 1/2 1 3/4 1 1/2

Iron Pipe Sizes—Brass	
1/4 1/2 3/4 1 1 1 1/4 1 1/2 2 2 1/4 3 3 1/4 4 4 1/2 5 6 inch	28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
Braze and Brass Tubing.	
Discount from List June 6, 1898, 25%.	
Bronze and Copper Tubing advance on Brass List 3:	
Roll and Sheet Brass—	
Discount from List June 6, 1898, 20%.	
Spelter—	
Western.....	per lb 6 1/2¢@6 3/4¢
Zinc.	
No. 9, base, caake, per lb 8¢   Open.....	per lb 8 1/2¢
Lead.	
American Pig.....	per lb 4 1/2¢@5¢
Bar.....	per lb 5 1/4¢@5 3/4¢
Old Lead in exchange, 4¢ per lb	
Soldier.	
1/2 & 3/4, guaranteed.....	per lb 19¢@19 1/2¢
No. 1.....	per lb 17¢@17 1/2¢
Refined.....	16¢@16 1/2¢
Prices of Soldier indicated by private brand vary according to composition.	
Antimony—	
Cookson.....	per lb 9 1/4¢@10¢
U. S.....	9¢@9 1/2¢
Hungarian and Japanese.....	8 1/4¢@9¢
Aluminum—	
No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:	
Small lots.....	per lb 37¢
100-lb lots.....	per lb 35¢
Old Metals.	
Dealers' Purchasing Prices Paid in New York.	
Heavy Copper.....	per lb 13 1/4¢
Light and Fined Copper.....	per lb 12¢
Heavy Brass.....	per lb 8 1/2¢
Light Brass.....	per lb 7¢
Lead.....	per lb 4 1/2¢
Tea Lead.....	per lb 3 1/2¢
Zinc.....	per lb 4 1/2¢
No. 1 Pewter.....	per lb 21¢
No. 2 Pewter.....	per lb 21¢
Pure Aluminum, Sheet.....	per lb 21¢
Tin Plate Scrap.....	per ton \$5.00@5.50
Wrought Scrap Iron.....	per gross ton \$16.00@16.50
Heavy Cast Scrap.....	per gross ton \$11.00@14.50
Stove Plate Scrap.....	per gross ton \$12.50@13.00

# THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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